N.A.A. BULLETIN

July
1957

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N.A.A. BULLETIN

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How A Steamship Line Controls Voyage Costs

by EDMUND F. DUNN

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The operations, themselves, both vessel and port, are reflected in this comprehensive and also well-detailed exposition of construction of budgets and operating control reports for a specialized industry of general interest appeal. The starting point taken was the recognition of the differing behaviour of fixed and variable costs.

OUR PROBLEM is a bit complex. In effect, we operate 16 mobile warehouses of four different types complete with power plants, hotel and dining room facilities. We are able to inspect each of these ships for about one week only out of each three months of operation. During this time, each ship may have traveled from 12,000 to 25,000 miles. All of our out-port operations are supervised by agents. With schedules which call for adequate service to over one hundred ports (each voyage will serve from twenty to twenty-five), it can readily be seen that no two voyages could be alike. Another factor which must be understood is that quantity and type of cargo mix as well as ports of call, create individual problems for each voyage. Devising a budget for these conditions was a most interesting assignment! Basically, our problem was solved by the construction of an adequate coding system, an on-the-job educational program in the use of this code, and an extensive cost analysis survey, all of which were completed by close cooperation of accounting and operating divisions.

Principles Applied

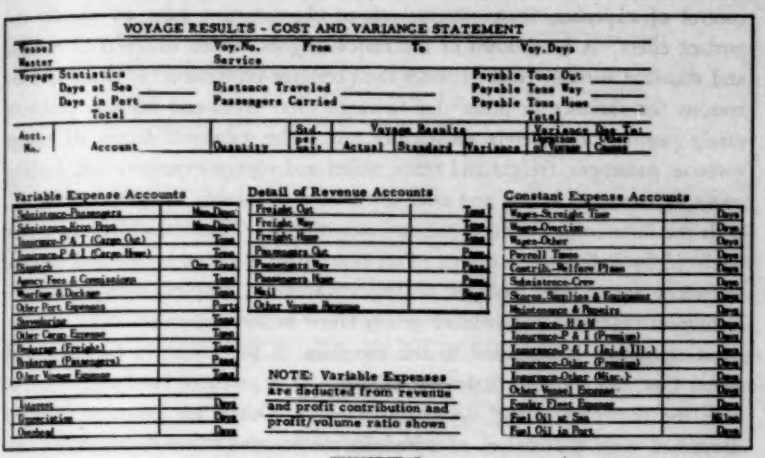
The principles of the system are the same as those proven in varied industries throughout our country. Budget data sheets are prepared for each account, an attainable goal or budget is selected by the person responsible for control of each particular expense, and reports are published to demonstrate the progress made in achieving the pre-determined goal of cost reduction. We go a step further in our system by constructing a report which evaluates the results reflected by the cost reports produced and also by making available to key personnel a current comparative statement of results of all controllable items by category, with the experience of each voyage of every ship recorded for comparative purposes in one display. These shortcuts to the digestion of the information contained in our reports save considerable time for management personnel involved, whenever discussion of the subject matter is required.

We did have some very decided advantages working for us as we attempted to design a cost control system. The industry has, at least for subsidized operators, just about the most complete uniform chart of accounts available to any industry. Our cost centers are clearly defined in ship and service and our unit of production is definitely isolated in the voyage. We feel that, when completed, our cost control system will furnish the one missing part to complete a well-rounded accounting system, for Farrell Lines at least. We also feel that any steamship operator could derive considerable benefit from such a system. I will go a step further and claim that adaptation of the system could be beneficial to any transportation or service industry.

Budgets are developed for each operating expense account in the chart of accounts outlined by the Maritime Commission. Most recent experience, background information, and current or anticipated operating conditions are thoroughly studied before arriving at a goal or budget for each type of expense and related subsidy, if any. Separate sets of budget data are used for each type of vessel and service. The application of the standard cost data as developed is indicated at the bottom of each data sheet. The standard allowance for each voyage is made in accordance with the statistics for each particular voyage, i.e. voyage days, passenger days, payable tons outward, homeward, distance traveled, etc. Thus, the actual expense for a voyage will be measured against a comparable standard.

Cost and Variance Statements for Several Levels of Management

The standard allowance and actual expense for the voyage are posted to cost and variance statements. Such statements are prepared for the various levels of



VOYAGE RESULTS - COST AND VARIANCE STATEMENT

Vessel _____ Voy. No. _____ From _____ To _____ Voy. Days _____

Master _____ Service _____

Voyage Statistics
Days at Sea _____ Distance Traveled _____ Payable Tons Out _____
Days in Port _____ Passengers Carried _____ Payable Tons Way _____
Total Payable Tons Home _____
Total

Acct. No.	Account	Quantity	Std. per Unit	Voyage Results Actual	Standard	Variance	Variance Due To: Operation of Vessel	Other Causes

Variable Expense Accounts

Subsistence-Passengers	Man-Days
Subsistence-Crew Mess	Man-Days
Insurance-P & I (Cargo Out)	Tons
Insurance-P & I (Cargo Home)	Tons
Dispatch	One Time
Agency Fees & Commissions	Tons
Wharfage & Dockage	Tons
Other Port Expenses	Ports
Stevedoring	Tons
Other Cargo Expense	Tons
Brokerage (Freight)	Tons
Brokerage (Passengers)	Pass.
Other Voyage Expense	Total
Interest	Days
Depreciation	Days
Overhead	Days

Detail of Revenue Accounts

Freight Out	Tons
Freight Way	Tons
Freight Home	Tons
Passengers Out	Pass.
Passengers Way	Pass.
Passengers Home	Pass.
Mail	Bags
Other Voyage Revenue	

NOTE: Variable Expenses are deducted from revenue and profit contribution and profit/volume ratio shown

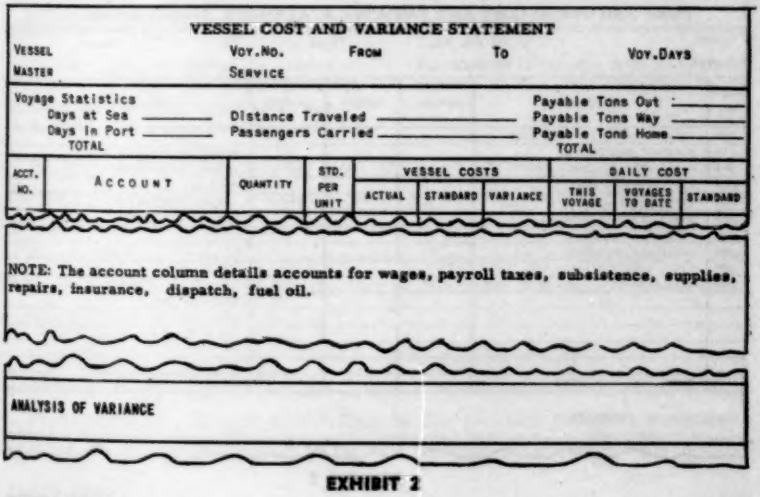
Constant Expense Accounts

Wages-Straight Time	Days
Wages-Overtime	Days
Wages-Other	Days
Payroll Taxes	Days
Contrib.-Welfare Plans	Days
Subsistence-Crew	Days
Stores, Supplies & Equipment	Days
Maintenance & Repairs	Days
Insurance-H & M	Days
Insurance-P & I (Premium)	Days
Insurance-P & I (Ind. & III.)	Days
Insurance-Other (Premium)	Days
Insurance-Other (Misc.)	Days
Other Vessel Expense	Days
Feeder Fleet Expense	Days
Fuel Oil at Sea	Bbl.Tons
Fuel Oil in Port	Days

EXHIBIT 1

management. The statements prepared for the executive committee analyze the overall voyage results. The remaining statements measure the performance of portions of the total expense. The statements are distributed to a restricted management group. Each is given only to members of management in a position to take action on the expense accounts covered in the statement.

Voyage results Cost and Variance statements (Exhibit 1) analyze the voyage results from the standpoint of profitability of the cargo mix as well as the



VESSEL COST AND VARIANCE STATEMENT

VESSEL _____ VOY. NO. _____ FROM _____ TO _____ VOY. DAYS _____

MASTER _____ SERVICE _____

Voyage Statistics
Days at Sea _____ Distance Traveled _____ Payable Tons Out _____
Days in Port _____ Passengers Carried _____ Payable Tons Way _____
TOTAL Payable Tons Home _____
TOTAL

ACCT. NO.	ACCOUNT	QUANTITY	STD. PER UNIT	VESSEL COSTS ACTUAL	STANDARD	VARIANCE	DAILY COST THIS VOYAGE	VOYAGES TO DATE	STANDARD

NOTE: The account column details accounts for wages, payroll taxes, subsistence, supplies, repairs, insurance, dispatch, fuel oil.

ANALYSIS OF VARIANCE

EXHIBIT 2

control of expenses, inasmuch as both of these factors have an equally important effect. A breakdown of the major cargoes carried in terms of revenue and standard variable costs provides the necessary information to determine the reasons for variance in profit due to cargo mix. Sales and capacity problems rarely permit a completely satisfactory mix. The statement details all voyage revenue, passenger, freight and other, vessel and voyage expenses, and resulting profit or loss, both before and after application of subsidy, budgeted and actual, with the differences posted to the variance column. The total difference is then analyzed by individual accounts. Provision is made on each cost and variance statement for a brief analysis of major variances, coupled with appropriate comments regarding constructive action taken or recommended. This management statement is restricted to the members of the executive committee. A vessel Cost and Variance Statement (Exhibit 2) is prepared for those concerned with the control of vessel operating expenses. Others are prepared for those concerned with the control of schedules, cargo, and passenger expenses. Exhibit 3 is illustrative. Pier operations cost and variance statements are prepared for the benefit of the terminal manager and pier superintendent. Exhibit 4 is an example. We use pre-printed Multilith forms for production of statements. In the construction of our cost and variance statements we utilize what might be called "cents-less" accounting, reporting results to the nearest dollar. The total, however, from which these reports are made, agrees with the voyage ledger exactly.

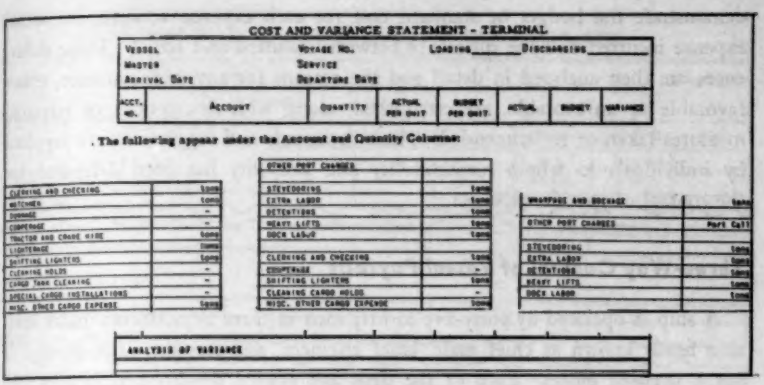
PORT AND CARGO COST AND VARIANCE STATEMENT (Voyage Summary)

VESSEL	VOYAGE NO.	FROM	TO	DAYS
MASTER	SERVICE			

ACCT. NO.	ACCOUNT	ACTUAL	BUDGET	VARIANCE	VOYAGE SUMMARY
265	AGENCY FEES AND COMMISSIONS				
270	WHARFAGE AND DOCKAGE				NUMBER OF PORTS OF CALL
279	OTHER PORT CHARGES				TOTAL PAYABLE TONS
280	STEVEDORING - BASIC				CARRIED
280	STEVEDORING - OTHER				TOTAL REVENUE
289	OTHER CARGO EXPENSES				REVENUE PER TON
29-	FREIGHT BROKERAGE				
293	PASSENGER BROKERAGE				
299	MISC. VOYAGE EXPENSE				
299	TRANSHIPPING				
					COST PER TON
					COST PER PORT CALL
					(79 ACC'T & 99 - MISC. VOYAGE)
	TOTAL PORT AND CARGO				

ANALYSIS OF VARIANCE

EXHIBIT 3



COST AND VARIANCE STATEMENT - TERMINAL

Vessel — Voyage No. — Loading _____ Discharging _____
Master — Service
Arrival Date — Departure Date

Acct. No.	Account	Quantity	Actual Per Unit	Budget Per Unit	Actual	Budget	Variance

. The following appear under the Account and Quantity Columns:

Clearing and checking	tons
Hatches	tons
Dunnage	"
Compressor	"
Tractor and chase hire	tons
Lighterage	tons
Shifting lighters	tons
Cleaning holds	"
Cargo tank cleaning	"
Special cargo installations	"
Misc. other cargo expense	tons

Other port charges	
Stevedoring	tons
Extra labor	tons
Detentions	tons
Heavy lifts	tons
Dock lab./f	tons
Clearing and checking	tons
Compressor	"
Shifting lighters	tons
Cleaning cargo holds	"
Misc. other cargo expense	tons

Wharfage and dockage	tons
Other port charges	Port Call
Stevedoring	tons
Extra labor	tons
Detentions	tons
Heavy lifts	tons
Dock labor	tons

Analysis of Variance

EXHIBIT 4

Vessel Operation; Expense Classification

During our basic cost analysis survey, we decided that a direct cost system with standards could be more easily adapted to our existing voyage accounting system than a standard cost system, which would have required a much more detailed educational program than we wanted to undertake. The fact that the cost of idle time and space is absorbed by each separate voyage experiencing these conditions possibly creates a slight distortion, but it is not considered a material deficiency in its effect on our goal of cost control. As we went on, we became more firmly convinced that direct costing would serve our ends. The expense accounts are divided into two broad subdivisions:

1. Variable: Directly related to volume or incurred as volume of traffic fluctuates.
2. Constant: Relatively constant or not influenced to a very noticeable degree by fluctuations in volume, but more closely related to the time consumed by the voyage.

By these more or less simplified divisions, we are able to quickly produce a profit-to-volume ratio for evaluation of cargo mix and determination of break-even point for the operation of future voyages.

As a matter of interest it may be noted that a voyage will terminate as of midnight on the day on which the last of the three following operations are complete:

1. Crew paid off.
2. Discharge of last of homeward cargo.
3. Completion of repairs.

Each month the voyages terminating in the previous month are evaluated in terms of budget or standard. Cost and variance statements are prepared to

demonstrate the budget or standard cost for each expense account, the actual expense incurred and the difference between standard and actual. These differences are then analysed in detail and the reasons for any wide variance, either favorable or unfavorable, are established, along with descriptions of remedial measures taken or recommended. These comments and suggestions are supplied by individuals to whom responsibility and authority has been delegated for the control of specific expenses.

Three-Way Control of Vessel Payrolls

A ship is operated by forty-five to fifty men in three departments under division heads known as chief mate, chief engineer, and steward. The steward is not a licensed officer. Each of the deck and engine departments is split into three groups to provide for a complete set of ratings, or job classifications, for each watch of eight hours—four on and eight off. While one set or watch is on duty, two are below. Extra men who do not stand watch are also part of the complement and work regular hours from eight o'clock to five o'clock. The forty-hour week is in effect for seamen and all work, even watch-standing, on the extra days in the week require payments to the men at overtime rates. Details of overtime classifications are spelled out in the written union agreements. The steward's department, with some exceptions, works eight hours a day in a spread of twelve or thirteen.

In devising our code for wages and related taxes and contributions, the requirements on end-use of the information to be tabulated were discussed in detail with the operating personnel directly concerned. An effort has been made to produce cost under this category by union for bargaining purposes and by type of overtime performed for control. We assemble, both by hour and by dollars, information on over sixty-five different overtime titles under five general overtime classifications for each of three separate departments. These departments are subdivided between licensed and unlicensed personnel. At the same time, this overtime is tabulated under each separate union agreement by departments: deck, engine, and steward, with the steward overtime split between passenger work and other. Under this system, we find it much easier to evaluate the impact on costs of any change in the union agreements. All of the titles used in our overtime analysis are taken from our printed union agreements. Although not all of the titles in the union agreements are used, we find the abridged set that we do use satisfactory in that the most frequently used titles, and even some that are not too frequently used, are covered. Not all of the foregoing information is printed for distribution but it is assembled in a form

VESSEL PAYROLL - COST AND VARIANCE STATEMENT

VESSEL / MASTER	VOY. NO. / SERVICE	FROM		TO		DAYS	
	THIS VOYAGE			PERCENTAGE OF STRAIGHT TIME			
DEPARTMENT	ACTUAL	STANDARD	VARIANCE	THIS VOYAGE	___VOYAGES TO DATE	STANDARD	
TOTAL PAYROLL							
CATEGORY							
BASE PAY							
OTHER WAGES							
TOTAL PAYROLL							
OVERTIME BREAKDOWN:							
OVERTIME - WATCHES							
TOTAL OVERTIME							
ANALYSIS OF VARIANCE							

EXHIBIT 5

which would allow for a quick tabulation of any particular type of information required, at the time the overtime analysis sheets in support of the vessel payroll cost and variance statements (Exhibit 5) are complied.

The cost and variance statement used for vessel payrolls provides information by department and type of payment, i.e., base pay, overtime, and other, with payroll taxes and contributions to welfare plans. Budgets have been prepared for each of these five types of expense in total but not by department. Budgets by department are to be established after sufficient historical data has been assembled. The first section of the form provides information by department and, for ease in comparison, the totals are converted to cost per day. The cumulative cost per day for the past year of the ship involved is also recorded, as well as the budget or standard for this type of ship and service. The second section provides information by category and, in addition, reports overtime by the five major subdivisions. The comparison in the second section is afforded by relating all of the information reported to base pay as a percentage. One statement is compiled to cover the complete period of the voyage with a separate statement prepared for each department.

The underlying analysis sheets facilitate a further tabulation on about 15 of the more frequently incurred overtime titles, made by posting the results to worksheets to afford a quick comparison of the voyage involved, with the experience of all voyages of all ships under the subject overtime title. Each month a summary is prepared to show the relative experience of all ships under each and all of these fifteen titles. From this summary it is possible to quickly note where control need be directed both by vessel and by overtime title. These summaries are prepared by hand and provided for the use of the marine superintendent who finds considerable use for them in discussions with the masters of the vessels. It has been found that the exhibition of these summaries, even to masters who feel that they have been doing a good job, have opened their eyes to points which could stand improvement.

Stores, Supplies, and Equipment; Maintenance and Repairs

The developing of a means to control cost under the title of stores, supplies, and equipment, required a different approach because the quantity and variety of items differed widely on each voyage. Although I doubt that anyone has ever tried to verify the extent of this variety, I would guess that there must be over 2,700 different items used by the engine department, over 1,500 used by the deck department, and probably about 2,500 different items used by the steward's department. The installation of a standard storing list inaugurated about five years before was of considerable assistance. Inventories of all unbroached consumable stores are taken and recorded at the end of each voyage. The costs of expendable items are absorbed by the voyage to which they are delivered. We used the inventory books and coded these items by sub-groups. A few minor adjustments were needed. We developed a code which adequately condensed all 6,700 items to a workable number. The coding of all items handled through purchase orders is practically automatic as the order, when issued, includes the code number applicable. In most cases, our suppliers have cooperated by including the code number in their billing.

We develop one cost and variance statement for the voyage as a whole (Exhibit 6), providing total and daily cost of both consumable and expendable groups of items by each of the departments, with expenditures for medical supplies and cost of storing included. Due to lack of sufficient detailed historical data our budget was developed for the voyage as a whole, rather than by subdivision of expenses. We are assembling this detailed background and intend to produce budgets in detail in the very near future. A cumulative daily average, taken from the history of the ship involved by each of the general

STORES, SUPPLIES AND EQUIPMENT: COST AND VARIANCE STATEMENT

Vessel Master	Voy. No. Service	From	To	Days

Account Number	Account	This Voyage			Daily Cost		
		Actual	Standard	Variance	This Voyage	Voyages to Date	Standard
	Deck – Consumable						
	Deck – Expendable						
	Engine – Consumable						
	Engine – Expendable						
	Steward – Consumable						
	Steward – Expendable						
	Medical						
	Loading Stores						
	Total–Stores, Supp. & Equip.						

EXHIBIT 6

groupings reported, is also provided for comparative purposes. In addition to this summary statement, a separate statement for each department on board ship is provided. These cost and variance statements report cost by the sub-groups previously referred to, as well as by consumable and expendable titles.

The time consumed on the vessel end of this assignment was the study of maintenance and repairs. This section of the code is by far the largest and required the combined efforts of the marine superintendent and each of his three division heads ashore, as well as our accounting group, during construction. Procedures were written for the complete operation from the construction of the request for appropriations to the construction of the cost and variance statement. Our code for maintenance and repairs was devised to enable us to assemble information in the form required by General Order 20, issued by the Maritime Commission in October, 1954. We are able to differentiate between work performed during formal inspection and survey periods and regular voyage expenses, by three departments, under two main divisions of expense for the eleven sub-divisions required on about fifteen pages of items incurring costs under these titles. In addition to these splits, one of the eleven requirements of General Order 20 requires a further split into eight subdivisions.

American ships are operated to a standard of maintenance and safety which is the highest in the world. This standard, set by government agencies and underwriters, often requires extensive and unpredicted replacements and renewals of structure and equipment. The inspections and surveys required by these agencies occur at varying intervals of time. Some may be performed during a series of voyages with a wide range in the amount charged to any one voyage depending upon the part of the survey accomplished. Our cost

and variance statement was devised to allow us to arrive at a cost which might be comparable on any group of voyages. We did this by arriving at a sub-total representing, as closely as possible, the charges considered to be the costs incurred during the operation of the voyage in question. We treat all other charges as deferred maintenance and apply a separate budget to them. A variance is not allowed to develop under this heading until the actual cost has exceeded the total budget allowed. This may occur on the third or fourth voyage of a series.

Control Information for Port and Cargo Costs

When we decided that we had arrived at a workable method to evaluate vessel operations, we then turned to voyage expenses. A wide variety of conditions influence costs under this general heading. Many of the ports at which we call are as efficient or better even than New York as far as the handling of specific cargoes go, but a very large number are rather primitive. For example, at some ports the ship never actually leaves the high seas but drops anchor a mile or more from shore, loading and discharging by means of small boats which carry the cargo through the surf to sandy beaches. Some ports are reached by traveling long distances inland by way of rivers. Thousands of different commodities are carried, each with its own peculiar size, shape, weight and stowage requirements. In many ports, cargo handling is performed under stevedoring contracts with individual rates for specific commodities. In other ports, the basis for such charges are the tons handled or weight, or cubic, or an average rate based on the efficiency of handling. In addition to the base stevedoring charge, a multitude of varied supplementary charges are incurred. Time of arrival and departure and amount of time spent within some ports, or range of ports, influences certain costs.

All of our out-port operations are handled through agents who receive a commission, usually based on the revenue represented by the activities involved. For this commission, the agent supervises the receipt and delivery of all of our cargoes through his port, orders labor and equipment required, and effects collections of revenues for our account. He submits an account for the port call which includes vouchers and receipts for all operations involved. The major costs are labor and related services required for the movements of the ship and the various cargoes. Here again, using the uniform chart of accounts, a code was constructed to allow for a satisfactory tabulation of a considerable amount of details under these eight general classifications.

Costs for voyage terminations during the preceding twenty-seven months

were analyzed to develop the background information required to establish equitable budgets. The amount of satisfactory detailed historical data available influenced our determination of the details for which we developed budgets. For operations in New York, we were able to construct budgets for all the items of expense we felt desirable. Out-port operations are not as completely covered by budgets. However, for all out-port budgets, our basic stevedoring cost was reasonably established and all other incidental cargo charges were related to this basic charge, percentage-wise. This very "wide brush" has been found satisfactory. In the case of charges for which sufficient history was available, budgets were based on it. A satisfactory method of determining profitability of commodities was developed by use of these budgets.

We are able to assemble information for a ready reference, by port, loading or discharging, straight time and overtime, by each of the most frequently incurred charges experienced under these general classifications. Working directly from the original entries, analysis sheets are prepared for tabulation of actual expenses, which are compared with individual budgets prepared from standards previously developed and applied to actual conditions experienced at each port of call. We do not fully develop this cost and variance statement for each port of call, but the information is so tabulated that it could be done very readily if required.

In place of this port cost and variance statement, the voyage operations are studied by segments, grouping operations for New York loading, other U. S. loading, and African discharging expenses relative to outward and way cargo handled during these periods, with a corresponding division of expenses relative to homeward and way cargo handled. (African loading, U. S. discharging, and New York discharging.) Each of these are prepared as soon as possible after receipt of the final main account for port operations to be included under each group. A final summary is prepared to assemble all of the information thus developed in a cost and variance statement for the voyage as a whole. These statements agree with the records in the voyage ledger when issued, after making allowance for charges to be recorded. We are provided with tonnage reports which show weight, measurement, and payable tons, as well as revenue by ports of loading and discharging. In addition, a commodity tonnage report is prepared showing payable tons by port of loading and discharging. We re-group these commodities within 12 groups according to relative speed of handling (payable tons per standard gang hour).

Budgeted costs are based on an average performance developed during the cost survey. Bulk cargoes and specific commodities such as reefer cargo, were

given separate consideration. With this information, we are able to develop a budget for any cargo mix for which no specific rate is available. We prepare a separate budget for discharging as well as loading activities for each port of call. Although not all details or all ports of call have been covered, due to lack of sufficient detailed historical data, we will be able to overcome this deficiency in the near future. The required information is being assembled currently. At present we are able to prepare budgets for about 25 of approximately 100 ports we service. These, being the most active ports, provide us with a satisfactory budget for any voyage. Activities at ports for which budgets are not available are not allowed to create variances in our reports. The budgeted and actual columns for these ports will contain the same figures.

At our own terminal in New York, where the major part of the general cargo inward, as well as outward, is handled, we are able to allocate any variance developed under the straight-time stevedoring category between cargo mix and stevedore efficiency. The remainder of the cargo reports are used to assemble historical data and provide information for use in auditing voyage results. Evaluation of proposed operations is also made easier by these reports. A comparison of costs is available by port of call and cost per payable ton, by each leg of every voyage. In addition, by posting the results assembled to other worksheets similar in form to the ones used in the study of costs under the vessel end of our program, we are able to inspect costs by category, vessel type and service, and by port of call. By reducing these cost to cost per payable ton, abnormal operations are quickly spotted.

Broader Development and Use of Direct Costing Looked For

The results obtained by the system up to this point are very difficult to prove. However, substantial circumstantial evidence is available on one point at least, in the form of statistics, tabulated and distributed by the Committee of American Steamship Lines. These indicate that, as to the relation of overtime to straight time paid, percentage-wise, Farrell Lines is consistently low operator in comparative services by about four percentage points. The theory followed at Farrell Lines is that effective cost reduction will come through continuous application of concerted effort on the part of a well informed cost-conscious management team. We feel that the information required by this team is more readily and economically obtained through direct costing.

Methods of Overhead Allocation in the Meat Packing Industry

by CLETUS P. ELSEN

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A soundly competitive basis for figuring departmental and product costs for a meat packer, so far as the factors of inclusiveness and reasonableness of overhead allocations are concerned, is described in this article. It is noted that the problem is not simple, yet must (and can) be tackled in a practical way if company operations in an industry having units of many sizes, are to be conducted profitably.

THE MEAT PACKING INDUSTRY is made up of all sizes and types of companies. The big packers have numerous plants and branch houses. They slaughter all species of livestock, conduct all processing operations such as curing, smoking, canning, sausage manufacture, etc. In addition they operate or own or control subsidiaries which process by-products such as hides into leather, grease and tallow into soap, glands into pharmaceuticals, etc. They have large allied operations, such as ice cream manufacture, sporting goods, butter and produce. There are other large companies which distribute nationally but do not process by-products to the final point, such as leather, soap, etc. There are small plants which distribute only in their own areas. There are plants which kill cattle only. Others only kill hogs, or small stock such as calves and lambs. Others do not kill hogs but cut dressed hogs. Others kill hogs and process cured and smoked meats and manufacture sausage. There are hundreds of sausage manufacturers who only produce sausage, other processors who only process or can meats, still others who only wholesale and job meat products, and others who sell exclusively to hotels and purveyors of meals.

A major accounting problem in regard to overhead allocation of the integrated packer, that is, the packer who may perform any combination of the functions described above, is the allocation of his cost so that he is competitive with the packer who may perform only one of these operations. The most important problem confronting the packer who slaughters, cures, smokes, cans and manufactures sausage is to sell his product at the most profitable stage. He may sell a ham as fresh, cured, smoked, boiled, baked or canned. He must determine whether it is more profitable to sell a fresh belly or process it further and sell it as slab bacon or process it further as sliced bacon. He may sell a pork

loin fresh or process it into a boneless loin or a fresh Canadian back or he may sell it as smoked Canadian bacon or as a six ounce sliced consumer style package of Canadian bacon.

The Overhead Problem in Two Parts

The method of allocating overhead to departments and to products plays an all-important part in management policy in buying and selling. This is particularly important, as a packer's buying policy affects not only his own area but can also affect national markets such as live hogs, etc. Inasmuch as the selling price of any of the cuts derived from the hog has no relation to the live cost of the hog or the dressed hog cost, the operating results of the cutting operation must be determined by the net realizable sales value of all these cuts. This involves not only the cost of the raw material, i.e., dressed hogs, but also the labor and indirect or overhead expenses involved in this operation. Whether to sell hams or other cuts in this stage or process them further is a problem. Whether to kill hogs so as to secure hams for the packer's smoked ham trade, or to buy fresh hams is also a problem. Overhead allocation is a most important factor and must be considered in each case.

These decisions must be made on a day-to-day basis. Figures must be available so that management has all the facts at its finger tips.

There are two aspects to the overhead problem:

1. The economic effect. 2. The accounting problem.

Before discussing the accounting problem I would like to briefly touch on the economic effect of overhead in the meat packing industry. In many cases management has failed to properly understand the problem. Many companies are obsessed with the belief that volume is necessary to reduce overhead cost. Companies are volume-conscious and not cost or profit-conscious. They strive for that extra volume, thinking in terms of reducing overhead costs, and end up by paying more for livestock and reducing their sales price far more than any possible saving effected by the increased volume. Increased volume may reduce cost but it may also result in surplus products which would have to be moved at a lower price. Furthermore, striving for additional livestock beyond the normal source of supply may result in paying more for livestock. If *all* packers set prices on this basis, losses are inevitable.

What's In Our Overhead?

The accounting problem consist of three phases:

1. Identification of overhead.
2. Basis of allocation.
3. Method of allocation to departments and to product.

The first question may seem elementary. However, it is not really a simple one. Overhead is a catch-all term which really covers a multitude of expenses. No two accountants, if asked, would include the same set of expenses. Therefore, it is important, first to find what we include or exclude. Webster's definition is: "Those general charges collectively in any business which cannot be charged up to a particular part of the work or products, such as rent, insurance, depreciation, etc." This does not give us all the answers. Neither do accounting text books. What is right for one industry is not correct for another. Record keeping or accounting must be tailored to the needs of the company and to supply the facts needed to enable it to operate and intelligently handle all competitive conditions which may arise.

ITEMS INCLUDED IN AND EXCLUDED FROM OVERHEAD

Expenses which we normally classify as overhead are:
General plant expenses
General administrative expenses

Expenses which we do not include in overhead:
1. All direct expenses such as materials, supplies and packages which can be charged directly to a product or dept
2. All fringe expenses related to labor
3. Shipping expense -- order filling, etc.
4. Delivery expense.
5. Selling expense.

Detail of Labor Expenses Excluded from Overhead

Labor which may be included in department payroll:
Misc. indirect dept. labor
Dept. clean up labor
Rest period
Clothes changing time
Clothing & laundry allowance
Sick leave
Overtime premium
Guaranteed time
Holiday pay
Vacation pay
Foremen's salaries

Fringe labor items which we allocate to all departments on the basis of each department's dollars:
Social security taxes
Unemployment tax
Workmen's compensation
Pension expense
Free gloves, frocks, etc., & free lunches & lunch room loss

Bases Normally Used to Allocate Overhead Expenses:

Labor expenses:
Number of employees
Direct payroll hours
Direct payroll dollars

Sales expenses:
Weight sold
Dollar sales

Investment expenses:
Sq. ft. floor space
Cu. ft. space occupied
Investment in machinery and equipment
Investment in machinery & equipment, less fully depreciated
Investment in machinery, building, and inventory

Additional bases listed in a survey by the American Meat Institute:
1. Production:
Pounds produced
Number head killed
2. Test or estimated
3. Payroll required for normal 40 hour week.
4. Job card
5. Preceding month's production
6. Engineering survey of usage, meters, etc.
7. Judgment of management

TREATMENT OF GENERAL ADMINISTRATIVE EXPENSES

Office salaries and wages, although normally considered as general administrative expense, are not treated as such by all packers. The small packer may keep only one account for office salaries, whereas the larger packer's office staff may be divided into departments, with a large number of persons performing such functions as invoicing, payroll, credits, etc.

A survey by the American Meat Institute indicated the following treatments of office salaries and wages:

Salaries and Wages:
Executive Plant, selling or administrative
Accounting
Misc. office--usually administrative
(invoicing, sales analysis, accounts receivable, credit,
(selling & traffic are considered by many as selling expense
Purchasing, personnel & payroll are considered by many as plant expense.

Other expenses can be both selling & administrative and are separated in that manner by a large number of packers. Still others classify the total expense of these items as administrative. The are: Telephone, Telegraph, Postage & Travelling.
Collection Expense and Bad Debts. The survey indicated about 10% classified these as selling and 90% as administrative.
Other expenses such as printing and stationery, tabulating equipment, office supplies, professional fees, legal, etc., donations association dues, periodicals, licenses, etc., were generally considered as general administrative.

EXHIBIT 1

Exhibit 1 has been prepared to help, not only to define what we consider overhead but also the type of expenses which we exclude, as well as the different bases commonly used for allocation in the meat packing industry. Some may consider all expenses not directly chargeable to product or operating department as overhead. I would rather subdivide them or classify them as listed on the exhibit.

The exhibit also lists the costs related to labor. These are not uniformly handled in our industry. Some companies in the meat packing industry, and a majority of companies in other industries, include in overhead practically all of the fringe labor expenses listed. In many companies, reference is made to direct and indirect labor payroll. Records are kept to show this separation and enable the company to determine direct variable and fixed labor expense. The terms, "fixed and variable expenses," are often associated with overhead and only tend to confuse the issue at this time. Many of the smaller companies are unable to keep this detailed analysis of labor costs. I prefer to think in terms of departmental labor and feel that all expenses related to it, such as the items shown on Exhibit 1, should be included in departmental expense. They may be carried in separate accounts or grouped as one account such as "labor burden". However, I do not believe they should be considered as overhead when allocating them to product cost.

Neither is there any uniformity in the industry as to what is included in general plant or general manufacturing or general administrative. In addition, there are certain expenses which many of the large packers include in selling which are grouped in general administrative by many of the smaller packers. At the bottom of Exhibit 1, many of these items appear classified as selling instead of administrative. In our company we have one account for each of these expenses (except bad debts which we consider selling) in general administrative. However, we estimate the selling portion of these expenses and use a different base of allocation for them than we do for other general administrative expenses. We determine a separate unit cost and include it in platform costs.

Bases Used for Allocation

The most commonly used basis for allocation of overhead expenses in all industry is labor. However, its used for all classes of expense allocation is not practical in this industry. We must first consider that the big packers, beef slaughterers only, pork slaughterers, sausage manufacturers, etc. can each be considered as separate industries within the meat packing industry. Obviously, if the integrated packer is going to complete successfully against an exclusive

beef killer, he must properly allocate his costs. Therefore, he cannot charge expenses and overhead of any other division to beef. Expenses such as depreciation, insurance, taxes, etc., must be allocated on the basis of capital invested in equipment, buildings, etc., used in the beef operation. The same principle is applicable to sausage and smoked meat divisions of the business. Exhibit 1 includes examples of the most commonly used methods of expense distribution. A survey by the American Meat Institute collected figures on eleven methods which fall into three major categories of labor, sales and investment. The specific conditions and factors surrounding the particular expense to be allocated must be considered before deciding on the basis of allocation.

A study of the percentage figures of a full-line company showing each department's percentage of labor, sales tonnage, sales dollars, of invested dollars would show the impracticability of using one base for all types of expense. Exhibit 2 is illustrative. These variations in expense relationship are not sur-

COMPARATIVE PERCENTAGES OF VARIOUS BASES USED TO ALLOCATE OVERHEAD:

	Labor	Pound Sales	Sales $	Investment		Sq. ft. floor space
				Bldg.	Machy.	
Beef	29.9	27.7	35.0	22.7	12.0	27.7
Fresh pork	31.9	24.6	26.8	31.4	25.4	23.3
Lard	3.2	12.3	5.7	8.8	17.8	9.0
Processed pork	15.1	13.1	18.8	22.2	18.5	23.8
Sausage	16.3	9.2	10.9	8.6	16.1	8.4
Inedible	3.6	13.1	2.8	6.3	10.2	7.8
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The above figures are from an average accounting period of a representative full-line company. These figures will vary from month to month, for labor and sales. Departments have been grouped for convenience of reporting

EXHIBIT 2

prising to an accountant who studies the allocation problem. Space does not permit complete discussion of them. They are submitted only as food for thought or argument. However, a few comments on each of the bases mentioned may be in order.

Number of employees, payroll hours or payroll dollars are all satisfactory labor bases and any one will undoubtedly give comparable results. One or the other may be more exact for certain expenses. However, most companies choose the one which is most convenient to compile statistics needed to use it. However, the same distribution results are not achieved in using sales tonnage as in using sales dollars. Which one to use is again up to the judgment of the accountant. These bases are more commonly used to allocate selling and delivery expense. However, a surprising number of companies indicated, in the survey referred to, that they use sales dollars or pounds sold in allocating general plant

overhead items. Square feet of floor space, cubic feet of area, and dollars of investment are bases most commonly used to distribute depreciation, insurance, taxes, building costs, etc. The ones used may be determined by the records available to the packer. They may not produce exactly the same results but all produce reasonably satisfactory results. Inasmuch as inventories are taxable in most states, it is the common practice to take the total investment in buildings, machinery and inventory as a base for allocating insurance and taxes.

A special word of explanation regarding repairs and maintenance allocation may be in order. Considerable number of packers, particularly the larger ones, keep a detailed record of each repair job, labor and material and the department in which the job was performed. Consequently, their job is not too difficult. The smaller packer is usually unable to keep these records. Therefore, the simplest and probably the best method is allocation of repairs and maintenance on the basis of investment in building and machinery. Frankly, my experience over the years makes me question the advisability of allocation on the basis of job allocation, as repairs and preventive maintenance are usually concentrated in certain departments periodically, resulting in large maintenance charges in certain periods which may distort the profit and loss for the period.

The problem of allocating power, light, refrigeration, water, and sewerage expense is always the prize problem of any packer. These costs can be divided into five basic expenses—steam, power, refrigeration, air and water (including sewerage disposal). Unit costs can be developed, for example, cost per M pound of steam, kilowatt hours for power, cost per ton of refrigeration, cost per M gallon for water. Exhibit 3 is submitted showing the normal expenses of the power department and their distribution to five classifications of steam,

ALLOCATION OF POWER PLANT AND WATER EXPENSES

1. Total		2 Steam	3 Power	4 Refrigeration	5 Water	6 Air	7 Ice Mfr.	8 Heat	9 Misc.	10 Beef	11 Fresh Pork	12 Lard	13 Inedible	14 sausage
1. xx	Coal	xx												
2. xx	Water	xx	xx		xx		xx							
3. xx	Purchased electric		xx											
4. xx	Labor-firemen incl.	xx												
5. xx	Labor-Engineer)Fringe		xx	xx										
6. xx	Supplies - oil,etc.	xx	xx	xx										
7. xx	Insurance - Taxes	xx	xx	xx	xx	xx								
8. xx	Depreciation	xx	xx	xx	xx	xx								
9. xx	Repairs	xx	xx	xx		xx								
10. xx	Total	xx	xx	xx	xx	xx	xx			xx	xx	xx	xx	xx
11.	Steam	oo	xx	xx	xx			xx		xx	xx	xx	xx	xx
12.	Power		oo	xx		xx	xx		xx	xx	xx	xx	xx	xx
13.	Refrigeration			oo			xx			xx	xx	xx		xx
14.	Water&sewerage				ob		xx			xx	xx	xx	xx	xx
15.	Air					oo				xx	xx			oo
16.	Ice Mfr						oo		xx	xx	xx			xx
17.	Heat							oo	xx	xx	xx	xx	xx	xx
18.	Total								xx	xx	xx	xx	xx	xx
19.	Base for unit cost	1,000#	KWH	Ton	1,000Gal.		Ton			Head	Head	CWT	CWT	LB.
20.	Production	xx	xx	xx	xx		xx			xx	xx	xx	xx	xx
21.	Cost per unit	xx	xx	xx	xx		xx			xx	xx	xx	xx	xx

EXHIBIT 3

power, refrigeration, water, and compressed air. An additional column is provided for ice manufacture, as many plants also manufacture ice for use in the plant and for icing cars and product for shipment. Lines 1, 2, and 3—coal, water and purchased electricity—are direct expenses which will usually increase or decrease directly in proportion to the production of steam, power or refrigeration. The others, Lines 4 to 10, remain more or less constant, regardless of production changes. Some companies purchase all their electricity, others make all their own, others do both. Some companies use steam to run ammonia compressors to produce refrigeration while others use electric power. These expenses are allocated to Columns 2 to 7 and a unit cost per M pound of steam or per k.w.h. or per ton of refrigeration is determined (Lines 20 and 21). Expenses (Lines 11 to 17) are allocated to operating departments (Columns 10 to 14). Inasmuch as these services (light, heat, power, etc.) are used in other operating departments, Column 9 is provided for allocation of these miscellaneous charges.

A basis for allocation of these expenses to operations can usually be arrived at by the accountant if he enlists the aid of the plant engineer to develop a rough measure of usage, such as the area of refrigerated space and temperatures maintained. The horse-power of motors, estimated time of operation, etc., can be used to determine kilowatt hour usage. Gallons of water used by departments, etc. could be a basis. A composite cost of all these expenses can be determined and a unit cost, such as per head, per pound, etc. determined for each department using the production figures shown on Line 20 of Exhibit 3 to arrive at the unit costs on Line 21. A project of this kind requires considerable study and work, but it is not necessary to do this each month. The original figures may be compiled on a year's operations and the resulting unit cost can be used for subsequent months and, perhaps for more than one year if there are no major changes in the plant's operations.

Getting the Allocation to Departments and Products

In thinking of expense allocation we must think not only of allocating expenses so as to determine departmental profit and loss, we must think in terms of allocating the expenses to product. This is modern accounting. The most important point is to be certain that the method used insures recovery of all expenses in the selling price of the packer's product. All expenses must be recovered. Depreciation, insurance, taxes, and other fixed charges are just as much an out-of-pocket expense as labor. The task of allocating the numerous types of expenses to operating departments each month and determining new

base percentages because of change in volume and labor presents a huge clerical problem to the small packer accountant. He does not have a large staff of accountants to assist him and, therefore, properly shies away from a departmental system.

The first problem is to keep a detailed analysis of expenses so that they can be logically distributed to operating departments and products. I have always looked for the simplest and easiest way to do any job. I like to call it being scientifically lazy. In this case the task can be made comparatively simple, requires little clerical effort, and still provides satisfactory results by the following method:

1. The establishing of a percentage basis for distributing the various types of expenses.
2. Preparation of a budget or an estimate of expenses for the next year.
3. Allocation of these budgeted expenses, using the percentage base established, to determine a group percentage base. The same percentage would be used each month for the group of overhead expenses instead of allocating individual expenses.

I know this is contrary to the practice of packers who change their base each month, depending on volume. Some packers use the current month's volume as a base. Other packers use the previous month's volume as a base for distributing the current month's expenses. The argument in favor of the budget method for each period is based on the theory that, if at the start of a tax period the packer has a plant consisting of facilities which are capable of handling "X" number of heads or pounds of product (based on the experience of the past three or four years, and estimated for the coming year), management can reasonably expect each division to bear a fixed percentage of the overhead expenses each month. However, under the method of changing the base each month, if a division increases its business, its overhead will increase, and the division which has lost business will have a corresponding decrease in cost.

In Exhibit 4 I have prepared data which illustrate the precedure my company has followed for a number of years. The departments shown are not all inclusive and figures used are for illustration only. The exhibit is indicative in the following manner:

1. Line 1 shows the unit bases for each department.
2. Line 2 is the estimated or budgeted volume for the period to be used in determining unit costs.
3. Lines 4 to 10 are typical groupings of expenses showing the different bases of distribution.
4. The total in Column 1 is multiplied by the percentage shown in each department to arrive at a department cost.
5. The total of each department cost for all the manufacturing expenses is shown in Line 12.
6. The percentage of each department's expense to the total is determined and also shown on Line 12.

This percenage can be used to make one calculation for distribution of general plant expenses for a month instead of making separate calculations for each

type of expense. It is not necessary to show on departmental statements a separate allocation for each type of expenses, such as depreciation, taxes, etc. Neither is it necessary to further add to the clerical work by determining a unit cost to the fourth decimal. The allocation is arbitrary in the first place and the departmental head has no control over it. In order to maintain control over individual expenses, that is, the showing of increase or decrease, a separate report of each expense compared to prior accounting periods can be prepared.

SUMMARY OF DISTRIBUTION BASES

Grand Total			Beef		Fresh Pork		Sausage	
Sales Weight	1. Base for unit cost of dept.		Live Weight		Live Weight		Sales Weight	
16,900,000	2. Base Weight		10,000,000		18,000,000		1,500,000	
	3. Department	Basis for expense dist.	%	$	%	$	%	$
9,462	4. Deprecn. Bldg.	% invest. or Sq. ft. of Sp.	20.6	1,950	33.1	3,132	11.8	1,116
9,728	5. Deprecn. Machy. &Equip.	% Invetment	12.5	1,216	27.5	2,676	20.0	1,946
12,000	6. Insurance&Taxes	% invest in bldg. -machy. &inventory	18.9	2,268	32.3	3,876	13.2	1,584
40,000	7. Repairs, Materials	Record of use of invest.	14.5	5,800	35.8	14,320	15.9	6,360
40,000	8. Repairs, Labor	in bldgs. & equipment.	14.5	5,800	35.8	14,320	15.9	6,360
26,000	9. Misc. Plant General	Payroll Dollars	28.0	7,280	32.1	8,346	16.0	4,160
24,000	10. Indirect Plant Labor, Clerical, Supts.	Payroll Dollars	28.0	6,720	32.1	7,704	16.0	3,840
76,000	11. Power Plant	Estimated Use		6,756		35,626		4,634
237,190	12. Total for year		15.9	37,790	38.0	90,000	12.6	30,000
1.40	13. Unit Cost			.38		.50		2.00
250,000	14. General Administrative		28.0	70,000	32.1	80,250	16.0	40,000
1.48	15. Unit Cost			70		45		2.67
100,000	16. Interset on Investment		18.9	18,900	32.3	32,300	13.2	13,200
.59	17. Unit Cost			.19		.18		.88

Figures for Illustration Only.

EXHIBIT 4

The fact that certain expenses may be up or down from the budgeted figure on which the base percentage was calculated is not considered important and would not make a great deal of difference on an annual basis.

The same principle applies to general administrative expense. It is shown separately on Lines 14 and 15 of Exhibit 4. Inasmuch as there is no uniformity in classification of plant and administrative, these two could be combined as both should be included in figuring platform costs when determining product costs. However, some accountants desire this separation for figuring costs for

inventory valuation. Attention is also called to Line 16, in which there is shown an allocation for interest on investment and a unit cost for the department. We do not figure this monthly or give effect to it in our profit and loss statement for the period, but we do use it in figuring costs which we give to the sales department.

Exhibit 4 also shows the method for determining the department unit cost used for figuring product cost. In my opinion, this is the most important calculation. I feel that it is more important to develop figures to know what you are doing on a day-to-day basis, than to make allocation of expenses to the product departments after the close of the accounting period. The latter can only reveal profit or loss to prove what you should have known during the period. Here, too, we have a decided difference of opinion among accountants as to which is the best method. In the illustration we used the simple method of dividing the production of the department (Line 2) into the estimated expenses of the department for a year, (Line 12) to get a unit cost. This would be the base unit cost, used in figuring the cost of all products processed in the department throughout the year. Adjustment will be necessary throughout the year to reflect any increases in cost such as labor increases. Changes in unit costs resulting from differences between actual expenses and estimated expenses and actual volume and estimates should be made throughout the year.

The above provides an average unit cost. It does not prevent the packer from changing this unit cost from period to period if the estimated volume for the month justifies such a course. In some cases, there is a large variation in the volume from one accounting period to another, particularly in the slaughter of hogs. To illustrate, during the 1955-56 packer hog year the average weekly Federal inspection slaughter was 1,298,000. In December, it was 1,664,000 or 1.75 times the number in June of 954,000.

There are variations of this method. One problem consists of the fact that some products are processed in a department which require more labor production time than others. Some accountants do not feel that a single department rate is satisfactory and that those products which incur additional labor in manufacture should carry a higher overhead rate. For example, sheep casing breakfast sausage uses more labor and, therefore, should carry a higher rate than six pound fresh pork bags. The latter should carry a lower rate than a six pound bologna which not only requires extra chopping and smoking labor but also uses considerable additional equipment. There are merits to both sides of the argument.

I would agree that there is justification for a separate rate for fresh and processed sausage. It all depends to what extremes you want to carry your cost

accounting. To illustrate, order filling costs are usually carried as an average cost per hundredweight, yet it obviously costs less to fill an order with a twelve pound box of sausage in it than the same order with a three pound box of sausage. I have favored one rate for the department as I feel that having different rates for each product, depending on its labor rate, can cause confusion to sales managers and others in top management. It certainly makes cost calculation more difficult.

There are some accountants who would distribute overhead expenses to the producing department using a fixed unit cost determined on the basis of estimated expenses for the year and estimated volume. The expense charged to the department for the period would be determined by multiplying the production for the month by this fixed unit cost. If this results in more or less than the actual expenses, they show an over or under-absorbed overhead figure. The effect of this would be to charge a greater amount of expenses to operations than was incurred, in periods of high volume, thus creating a profit reserve which would be dissipated in periods of low volume as, during these periods, a smaller amount would be charged to operations than actual. Space does not permit going into all the pros and cons on this. I think it sufficient to say the majority of packers use in the general books a method which reflects the actual expenses incurred during the period.

All Costs and Losses Must Be Taken Into Account

We must consider and respect the opinion of others on this subject but, if poor accounting methods are causing unnecessary losses to those using them, it should not be inappropriate to call attention to this fact. Many companies do not now have adequate accounting information. Many other companies have such information but, apparently, the coordination between the accounting departments and the buying and selling departments is not good. Lack of accounting information, inadequate accounting information, or failure to make intelligent use of available accounting information can put a company at a competitive disadvantage, because it is not recovering its costs in the selling of its products or allowing for its costs in determining what it can pay for livestock and it can also result in the company contributing to unsatisfactory market conditions.

Old and New Cost Control Media For A Sugar Planter and Processor

by M. A. PIETSCHMAN

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This article presents both the former system of cost control, which relied on comparison of experienced unit costs for various periods and operations within the company, and the present system, which applies engineered standards and flexible budgets on the basis of accounts revised to reflect operating responsibilities. The presentation is in perspective of a number of years of experience with the new system.

EARLY IN 1948, consultants were retained by American Factors, Limited, for the purpose of presenting to the agency and plantation managements plans showing the benefits to be derived by following the latest principles of industrial engineering. The survey was divided into three phases: methods engineering, wage incentive administration and cost control, which includes setting standards or targets for all elements of costs, regular comparison of actual costs against these standards, and organized effort to correct unfavorable cost trends. It is this third phase which is the subject of this article.

A pilot installation of cost control was completed in 1950 in the boiling house at Oahu Sugar Company, Limited, the closest plantation to the agency. This initial installation was aimed at demonstrating the value of cost control and the procedures involved in establishing engineered standards. The work clearly demonstrated a need for modification of accounting practices before fully effective control of costs by industrial engineering could be achieved. Any modifications in accounting involved agency-wide practice which could not be changed at the plantation level.

It was, therefore, decided that a survey of accounting be made on all plantations within the agency. The survey was made by a team of four. The group began with a visit to the offices of all seven American Factors' plantations. This survey had four basic objectives:

1. To determine the basic accounting and control needs of the plantations and the agency.
2. To investigate the present accounting and control practices and determine where they met requirements and where they needed modification for adequate control of costs.
3. To explain to agency and plantation people the proposed method of controlling costs, how it works, and the advantages to be gained from it.
4. To lay out a program for accomplishing the needed modifications in accounting and control practices.

Although the complete tour took two months, almost half of the time was spent at Kekaha Sugar Company, Limited, where the current accounting system was reviewed thoroughly. It was also during this period that the proposed accounting system began to take shape. Because the new accounting system is superimposed upon many practices of the old system, it is important that the latter be briefly reviewed.

Unit Cost Comparisons Under the Superseded System

The basic accounting system followed by most of the sugar plantations in the Territory was introduced by the Kahuka Plantation Company between 1905 and 1907. This represented the initial effort to classify plantation expenses by functional categories, such as plowing, planting, and harvesting. Inasmuch as labor was, and still is for that matter, by far the largest element of expense, the first accounting classifications were for the account of labor only. No attempt was made to classify material and sundry expenses separately at that time. The Kahuka accounting methods were introduced first among the American Factors' plantations at Oahu Sugar Company, Limited. After refinement, they were extended gradually to the other plantations in the American Factors' group.

In 1936 the first definite steps towards a uniform accounting system were taken by the agency. Names of the accounts were standardized and some attempt was made to define the content. Labor, material, and sundry expenses were separated and initial steps were taken towards establishing a uniform system of applying service charges. The final step towards standardization of accounting was taken in 1940 when a uniform chart of accounts was established by the agency with the assistance and approval of the plantation. An accounting manual was issued. Since then we have had uniform annual statements from all our plantations.

The accounting system in use by the plantations through 1950 can best be reviewed by commenting on the cost of crop statement, a detailed document which is unfortunately out-size for illustration here. This statement shows the total costs incurred in raising the 45,722 tons of sugar marketed by Kekaha Sugar Company, Limited, in 1949. There are four major expense accounts: —direct labor, material, sundry expenditures, and service charges. Direct labor includes all labor actually used in growing of cane and its processing into sugar. Material includes all material used directly in the operation to get the sugar in the bag. Sundry expenditures includes such expenses as rents, property taxes, and depreciation. Service charges are expenses to a crop brought about

by charges from a service department. There are service departments for autos, trucks, tractors, electrical energy, and irrigation pumps, etc. (The purpose of service charge accounting is to provide a way for the passing of charges between departments at an experienced rate which is based on an estimate of the annual expenses of the service department. A service department charge hence is, itself, made up of labor, material and sundry expenses, and even service charges from another department.) These basic expenses are then broken down among the functions of raising sugar, such as plowing and planting, weed control, fertilizing, harvesting, etc.

Using description of this cost of crop statement as background, we might now review the methods of cost control in effect under the 1950 system. Although the expenses are listed by processes, the real basis of control is by unit. Agricultural costs are predominantely controlled by such units as average cost per acre, average cost per ton net cane, and average cost per ton 96° sugar. In addition to maintaining the costs in the method reflected on the cost of crop statement, each plantation maintains each of these costs both by labor, material, etc. and by processes for each field. In 1949 Kekaha had 137 fields, so it can be seen there are many units to be reviewed. Most field men compile running records of a statistical nature for each operation performed in each field. This enables them to correlate unusual events with high or low costs shown by the accounting figures. Total cost for operations in individual fields are compared with costs for these operations in the same or similar fields in prior years. The field ledger on which all these costs are maintained in the office is used as reference when a detailed analysis of the costs in any one field is required.

In the manufacturing process, the expense items such as supervision, cane cleaner expense and mill expense are broken down into the four control accounts of labor, material, sundry, and service charges. Cost is controlled by comparing these expenses to previous periods. Operation of the factory is controlled by such units as grinding hours, tons cane per hour, tons 96° sugar per hour, etc. Repairs are controlled by analyzing the basic expense accounts for approximately 45 stations within the factory. The stations are designated primarily by pieces of equipment. There is similar control of costs by units in the case of equipment and power.

This brief review of the previous sugar accounting system discloses that, primarily, control of costs is based on unit costs. These, especially in the agricultural part of the business, are controlled by comparing costs of a particular operation in a field of one crop to that of the last crop and other previous

crops. However, in comparing the costs between fields or of the same field for different crops, many variables are present which must be and are considered. A field plowed in 1949 may, due to the rotating of crops, not have been plowed since 1942. During such a period, the wage rates and cost of materials may have changed considerably. With so many units of control, this is no small problem for an operating man to review. (In the last few years, the costs of raising sugar have, in fact, greatly increased.) Yet, the problem of cost control cannot be by-passed. Since the Hawaiian sugar industry has virtually no control over the sugar price, which is based on a world market, it can be seen that the only way we can maintain profits is to reduce costs.

BASIC COST ACCOUNTS

Payroll	Pensions and Annuities	Depreciation and Amortization
material	Rent	Miscellaneous
Out side Services	Insurance	Service Charges
Cane & Water Purchased	Taxes	Service Credits.

EXAMPLES OF COST CENTERS

ADMINISTRATIVE		
Accounting	Employee Benefits	Administrative
Industrial Engineering	Warehouse	General
Industrial Relations		
AGRICULTURAL		
Plowing	Weed Control	Loading Cane
Planting	Pumps&water supply system	Harvesting
Drainage	Irrigating	Hauling Cane
Ratooning	Fertilizing	Agric. Research &
Herbicide Plant	Cutting Cane	Control
	Agricultural General	
MANUFACTURING		
Cleaning	Boiling House	Laboratory
Crushing	Fireroom	Factory -
Cleaning & Crushing	Waste Disposal	General
SERVICE		
Agricultural Mechanical Gen.	Power System	Blacksmith Shop
Automobiles and Trucks	Pumps	Carpenter Shop
Civil Engineering	Spraying Machines	Electric Shop
Concrete Products Plant	Stable	Field Implement shop
Construction	Tractors	Garage
Loading Machines	Trucks	Machine Shop
Mechanical Engineering	Utility Equipment	Metal Shop
		Railroad
SUPPLEMENTARY		
Dairy	Plantation Retail	Restaurant
Housing	Store	Service Station
Medical	Ranch	Miscellaneous
SPECIAL		
Storm Damage	Rock Removal	

EXHIBIT 1

Setting Up Cost Centers Under the New System

Under the current program of cost control, every effort is made to reduce costs by assigning clear-cut responsibility for every plantation operation to a key operation person. This is done by breaking down the plantation into functional units known as cost centers, as shown on Exhibit 1. Each plantation is broken down into six families of cost centers:

Administrative	— All cost centers which pertain to the general administration of the plantation as a whole.
Agricultural	— All cost centers pertaining to the planting, growing, and harvesting of sugar cane.
Manufacturing	— Process cost centers which take the sugar cane at the mill yard and process it into raw sugar.
Service	— All engineering, power, utility equipment and maintenance.
Supplementary	— Supplementary operations not directly related to the production of sugar.
Special	— Special situations which arise requiring temporary cost centers, such as storm damage repair or a special rock clearing program.

There is a department head in charge of each cost center family. Each is then broken down into individual cost centers, which are the basis of controlling costs under our new system. The cost center head in charge of each cost center has complete charge of costs in his cost center. In a sense, he is the manager of a small business and he is expected to operate this business at the lowest possible cost. This makes him an important member of the management team and, through the collective efforts of all supervisors, an over-all reduction in costs is expected. Supervisors have always been responsible for costs but there have been loopholes.

For example, to take the case of hauling cane from the fields to the mill under our old system, cane haul trucks were in a service pool and were rented by the harvesting department at an experienced rate. Under such a plan, a supervisor using a service had no control over the cost he was charged. The supervisor's only control was vested in his decision to use the service or perform the function with his own labor and equipment, if possible. Reports were rendered to supervisors, upon request, to show the amount and sources of service expense. Now the trucks are assigned to the harvesting department and all truck costs are charged to it.

The responsibility, authority and scope of each cost center is spelled out in a cost center specification which has been approved by the cost center head, the division head, office manager and plantation manager. In the cost center specifications, the area of responsibility is outlined covering facilities assigned,

such as land, buildings, and equipment. Included also is a list of all authorized sub accounts to which expenses in that cost center may be charged.

There are ten basic expense accounts which are incurred through the direct obligation of the plantation. They are:

1. Payroll — all salaries and wages, including sick and vacation pay.
2. Material — all supplies chargeable to the company operations.
3. Outside services — all expense incurred by a plantation for services performed by outsiders for the benefit of the plantation, i.e., contract repairs, telephone service, legal fees, etc.
4. Cane and water purchased — gross amount credited to planters for cane purchased from them and also the cost to the plantation of water purchased from subsidiary water companies or outside firms.
5. Pensions and annuities — all pension payments authorized by the board of directors and also all company payments made toward the purchase of group annuities.
6. Rent — amounts incurred, or payments actually made, for the rental of properties used in the operation of the business. Rent includes rent expense for land, buildings, and equipment.
7. Insurance — all types of risk insurance with a few exceptions, such as insurance on leased property when the insurance on such property is paid by the lessor and passed on to the lessee.
8. Taxes — all Federal, State, Territorial, and City and County taxes and licenses, except Federal and Territorial income taxes, which are treated as a deduction of net income.
9. Depreciation and amortization — depreciation on the cost value of buildings and equipment and the amortized value of leaseholds and leasehold improvements.
10. Miscellaneous — expense items not otherwise specified which are either of infrequent occurences and/or too small to classify specifically in a separate expense account, such as donations, books and periodicals, etc.
11. Service charges — charged with intra-plantation charges between cost centers of the plantation. It is a bookkeeping device to charge various cost centers for services performed without disturbing the expense accumulations in the natural expense accounts. The main use of this account is for the transfer of expenses from a service cost center to an operating cost center; e.g., repair costs of a truck from the garage to the harvesting cost center. Of course, a need for the account is also present between operating cost centers when equipment is loaned.
12. Service credits — This account is the contra entry to service charges.

Performance Reports Against Standards

Using these natural expense accounts as a basis, a monthly statement called a Performance Report (Exhibits 2 & 3) is prepared for each cost center head, showing the expenses incurred by his department during a given month, divided into the natural expense accounts. Each natural expense account is broken down into as many sub-accounts as the supervisor requested when he helped draw up the specification for his cost center. At the present time, pensions and annuities, payroll taxes, and depreciation and amortization expenses are not distributed among the various cost centers. Definite value is to be gained by doing this at a later date but this detail has been passed over at this time in order to facilitate the installation process.

OAHU SUGAR CO., LTD. PERFORMANCE REPORT

Group: Manufacturing. Cost Center: Boiling. Period: May. Responsibility: G.Bromley

Cost Item	Standard $	Actual $	Gain or (Loss) $	% Perf.
PAYROLL				
Operating:				
Clarification & Evaporation	509	739	(230)	68.9
Sugar Boiling	1,269	1,996	(727)	63.6
High-Grade Centrifuging	456	1,469	(1,013)	31.0
Low-Grade Centrifuging:				
Labor Usage Variation			(1,281)	
Material Usage Variation (Sucrose)			(129)	
Total Low-Grade Centrifuging	1,164	2,574	(1,410)	45.2
Remelting & Crystallizing	443	1,151	(708)	38.5
Bagging, Storing & Loading	1,189	1,851	(662)	64.2
Total Operating Payroll Cost	5,030	9,780	(4,750)	51.4
Other:				
Supervision & Clerical	2,357	2,357	--	100.0
Janitor & Sanitation	444	393	51	113.0
Operating Clean-Up	328	306	22	107.2
R & M Own Labor	1,179	1,219	(40)	96.7
Delay Time	--	71	(71)	--
Overtime Premium	180	166	14	108.4
Total Other Payroll Cost	4,488	4,512	(24)	99.5
Total Payroll Cost	9,518	14,292	(4,774)	66.6
MATERIAL				
R & M Materials	1,333	1,582	(249)	84.3
Tools	--	--	--	--
Lubricants	404	480	(76)	84.2
Lime	--	--	--	--
Operating Supplies (Less Lubs.)	5	60	(55)	8.3
Chemicals (Less Lime)	621	902	(281)	68.8
Total Material Cost	2,363	3,024	(661)	78.1
SERVICE CHARGES-IN				
Repair Shop - Mechanical	--	3,246	--	--
Repair Shop - Electrical	--	394	--	--
Repair Shop - Equipment	--	--	--	--
Power Plant	--	--	--	--
Fire Room	--	--	--	--
Service - Automotive	--	--	--	--
Service - Other	--	51	--	--
Total Service Charge Cost	1,427	3,691	(2,264)	38.7
Total Cost on Standard (Less Sucrose Recovery Cost)	13,308	21,007	(7,699)	63.4
Costs Not on Standard				
Payroll		2,673		
Material		2,341		
Outside Services		--		
Miscellaneous		--		
Service Charges-In		2,716		
Total Cost Not on Standard		7,730		
TOTAL OPERATING COST		28,737		
SUCROSE RECOVERY				
Sucrose Loss in Filter Cake	4,964	7,084	(2,120)	70.0
Sucrose Loss in Final Molasses	60,741	65,178	(4,437)	93.2
Sucrose Loss - Undetermined	--	3,080	(3,080)	--
Sucrose in Sugar Due Period	914,495	914,495	--	--
Total Sucrose Input	980,200	989,837	(9,637)	99.0
Final Molasses Credit:				
Molasses Produced @ 85.0 Brix	(23,565)	(25,274)	1,709	107.3
Brix Variation in Molasses Shipped	--	216	(216)	
Total Credit	(23,565)	(25,058)	1,493	106.3
TOTAL SUCROSE RECOVERY COST	956,635	964,779	(8,144)	99.2

EXHIBIT 2

OAHU SUGAR CO., LTD. OPERATING STATISTICS*

Group: Manufacturing. Cost Center: Boiling. Period: May. Responsibility: G.Bromley

Item	This Period		This Year To-Date	
	Tons Suc.	%	Tons Suc.	%
Sucrose Losses				
Final Molasses	757.88	6.58	2,765.97	6.78
Filter Cake	82.37	.72	315.72	.77
Undetermined	35.81	.31	413.	1.01
Total Loss	876.06	7.61	3,494.69	8.56
Sugar Due Period	10,633.66	92.39	37,329.92	91.44
Total in Mixed Juice	11,509.72	100.00	40,824.61	100.00
Recovery				
Actual Boiling Recovery		--		--
Standard Boiling "		93.77		--
Mixed Juice & Syrup				
Net Tons Mixed Juice	92,909.85		334,932.14	
Brix Mixed Juice	14.07		13.87	
% Suspended Solids, M.J.	1.07		1.03	
Grav. Pur. Mixed Juice	88.06		87.88	
Grav. Pur. Syrup	88.87		88.76	
Pur. Increase, Sy-M.J.	1.15		1.17	
Sugar				
Tons 96° Sugar Mfd.	11,040.59		38,958.49	
Sugar Pol.	97.73		97.75	
Molasses				
Tons Mol. Due Period	2,433.52		8,684.94	
Act. Grav. Pur. F. Mol.	38.02		37.56	
Std. Grav. Pur. F. Mol.	35.27		33.58	
Operating Days	23		95	
Operating Cost				
Per Operating Day	$1250		$1502	
Per Ton 96 Sugar	$ 2.60		$ 3.66	

*In actual use, this is a portion of the Performance Report (Exhibit 2)

EXHIBIT 3

In the first column of the performance report, broken down by the individual expense accounts, is the standard for the particular operation. In the second column, the actual expenses incurred by the cost center during the month are listed opposite the standard cost for each operation. By comparing these two columns, a supervisor will readily know how he is doing from a cost standpoint. Some supervisors have had experience with standards of various kinds, but this is the first attempt to put each supervisor under a standard for his own operation.

The simplest form of cost standard is the fixed budget. In setting this type of standard, the supervisors and department heads work with the office manager in figuring out in advance how much money should be spent each month within each cost center on the plantation. In setting up fixed budgets, payroll, material, service charges and other costs are estimated separately. The supervisors then exercise control over costs by comparing what they spent each month against the predetermined estimate or budget, as shown on reports prepared by the accounting department.

For some cost centers, the fixed budget provides adequate control, particularly for those in which operating conditions do not vary, like general administrative, accounting, and industrial relations. However, in cost centers in which there is wide variation in operating conditions, fixed budgets are too inaccurate for close control of costs. For example, the planting program may call for 100 acres to be prepared and planted during a certain month, so the planting overseer and the field superintendent allow for this rate of operation in their fixed budget for planting that month. However, due to weather conditions, only 25 acres may be planted that month. Obviously, the fixed budget amounts should far exceed the costs for that month. The following month the situation may be reversed. Over the entire planting season, the fixed budget probably would work out all right, but the planting overseer would have little to go on in his monthly cost comparisons.

To remedy this condition, variable budgets offer a solution. The variable budget is a refinement of the fixed budget. Using the same illustrations of planting, let us assume that the planting program called for 800 acres to be planted during the year. A fixed annual budget would be estimated for this planting program and converted to a budget cost per acre. At the end of each month, the acres planted would be multiplied by the budgeted cost per acre to arrive at the adjusted planting budget for the month. This figure would be compared against the costs for the month for a more realistic comparison. With a variable budget such as that just described, it makes no difference whether 25 or 100 acres are planted during the month—the budget is adjusted to the amount of work actually done. Variable budgets are now in use for most of the production operations. Each supervisor is called upon to assist with this preparation.

Work has already been done on most of our plantations to refine the variable budget rates into what are known as engineered standards. However, in setting these rates a great deal of reliance had to be placed on past performance and the estimates by the people concerned. Past performance has serious shortcomings as a basis for measuring present cost performance since it does not necessarily represent good performance and it applies to conditions of the past rather than the present. Engineered standards are intended to overcome these weaknesses in setting up cost goals. Engineered standards are established through detailed analysis of each element of cost. They represent minimum cost requirements, free of avoidable lost time and waste. Therefore, they represent good, attainable performance for the conditions under which the operation actually is to be performed.

Again using the illustration of planting, engineered standards are set for

each item of planting cost, such as seed cane and planting labor. A standard for seed cane, for example, would be the amount of seed called for per acre under the plantations' standard planting practice. Standards for planting labor are set through time study. Separate labor standards are set for the different planting conditions encountered, such as condition of soil and rockiness of field, which have an important effect on the rate of planting. Standards for labor include the amount of labor required per acre planted. These standards are multiplied by the number of acres planted in the month to give the standard amount of seed and labor required for the period.

The heart of the new cost control program is the report of performance against standards. The performance report presents a comparison between actual costs for a given period of time and the budget or standard costs for the same period. These reports are issued monthly as a minimum, and weekly or even daily, depending upon the degree of control desired. Department heads and the plantation manager receive monthly summary reports of all operations under their jurisdiction. All summary performance reports are tied in directly with the individual cost center performance reports, as well as with the plantation profit and loss statements. This enables the management to locate promptly the major sources of both good and poor performance, by cost center and by account classification. The contribution of each key supervisor to the plantation's profit or loss can be determined.

All performance reports are designed to meet the individual control requirements of each cost center. Because they are prepared primarily for the cost center supervisor, they are tailored to fit his needs. Although it is desirable that performance reports be as uniform as possible between plantations to facilitate comparisons of costs, this uniformity is of secondary consideration. The prime consideration is how the report is to be used by the supervisors, the department heads, and the manager. The performance report is the yardstick of cost control, highlighting weak spots and measuring progress or the lack of progress.

However, just having this performance report will not assure effective cost control, as is the case with all accounting reports. The supervisors must get behind the program and strive to reach the established cost goals. Beyond the presentation of "cold" summarized data shown on performance reports lies the important job of anlayzing and interpreting this information so that its true significance becomes known to responsible supervisors. Performance reports are designed so that they are readily understood, but there are occasions on which supervisors welcome some assistance in analyzing the report. This kind of assistance is made available through the services of a cost control engineer and

the industrial engineering department at each plantation establishing engineered standards.

Prompt Installation; Useful Results

Virtually all of American Factors' plantations installed the new system of accounting promptly. Top reports coming into the agency from these plantations are based on the accounting principles underlying it. Expenses are presented according to the ten natural basic expense accounts and collected by cost centers. All costs are compared to a standard, be it a fixed, variable budget or an engineered standard. Each plantation is progressing independently on variable budgets and engineered standards and all have established at least a fixed budget for each cost center.

An accounting manual covering the definition of all uniform sub-accounts and an explanation covering the accounting procedures under the new system is used at the American Factors' plantations. The first six weeks of the year of change-over were no "picnic" on our plantations, what with closing of the previous year's books and the installation period of a new system. However, the worst part was over rather quickly and we entered upon a period of clearer sailing accounting-wise and, more important, a reduction of costs.

CORRECTION

Attention is called to omission of a denominator in one of the fractions appearing under "Computations" in Exhibit 1 of "Closer Planning Through Forecasting Techniques" by George W. Chane in the May 1957 issue of the *Bulletin*. Beneath the numerator which reads $\sqrt{\text{Sum of Deviators Squared}}$ the figure 11 should have appeared as the denominator in arriving the result of 624.55.

Pricing Property Retirements in a Public Utility

by WILLIAM H. SNOW
Accountant, Statistical Department, Southwestern Gas and Electric Company, Shreveport, Louisiana

and JAMES R. FLEMING
Oil Leases & Royalties, Longview, Texas

Most companies have, at one time or another, had difficulty in costing out property retirements. This article recounts the problems which beset one public utility. It deals with the procedures originally employed by the company, the detection of fallacies embodied in them, the corrective techniques used, and means of determining to what extent correction was effective. Depreciation policy is also treated.

ORIGINAL COST OF PLANT in service, less the recorded amount of depreciation, is the chief determining factor in setting the rate base for a public utility. The rates charged should be neither in excess of nor below an amount necessary to afford a fair rate of return. For this reason, some reliable method is necessary for determining fair valuation for the plant asset account. Strict regulations are placed on public utilities and the system of accounts, as set up, must conform to service requirements of the regulatory commissions. The system reflected in this article is based on the uniform system of accounts prescribed by the Federal Power Commission and the uniform system of accounts for electric utilities adopted November, 1936, by the National Association of Railroad and Utilities' Commissioners. It provides for record of a property account composed of a vast number of small units as well as large ones, each of which is required for the existence and continued operation of its system. Because of their large number, the identification of each unit is virtually impossible and, for this reason, the problem of pricing these units for retirement years after their installation is difficult.

Item Cost Accumulation Under the Job Order System

All properties are further grouped into units. A unit consists of major and minor items of property. The distinction is rather specific in most instances. For example, a cross-arm which is located on a pole is properly labeled as a major unit, while the bolts, braces, washers, etc., necessary for its installation are minor items of material, the two together making up a property unit. Some minor items are associated with one or more major units and the proper iden-

tification of these minor items with their associated units is often difficult. The case often arises in which the number of minor items retired does not match the number ordinarily used for the installation of the unit. For example, if four braces are necessary in the installation of a cross-arm, but only two are shown on the retirement work order, then the problem arises as to whether the whole unit was retired excluding the two braces or whether the two braces were replaced previously and, if so, whether they were retired within another unit. This illustrates a complexity typical of problems encountered in retirements. It suggests that the original accumulation of costs in a proper manner is the starting point.

REQUISITION ON STORES No.

Town No. Date / / Code Number

WO or JO No. Account No.

ONE ITEM ONLY ON REQUISITION Quantity Unit Cost

Lot Number

Unit

Quantity Issued

MATERIAL TRANSFER REFERENCE

Stamp To Town No. M. R. S.

Date Number

Unit

Approved Issued By Received By Lot Excess - See R. O. S. No.

Dept. Head Foreman Storekeeper

Ticket No.	Code No.	Unit Cost	Lot No.	Quantity	Amount

EXHIBIT 1

Work begun calls for the use of a job or work order, depending on the amount of work to be done. Ordinarily the job order is used for one and two pole extensions and subject to no approval from the main office. A work order is used whenever the amount of work is more extensive and involves a larger outlay and requires approval from the board of directors of the company.

Material is issued from the storeroom as soon as the authorization is made and work begins. An issue ticket (Exhibit 1) records the unit drawn, quantity, price, date, work order number, account number, and division location. Any portion not used is returned to the storeroom and a return slip, similar in form, is issued. One slip is issued for each item of material. The proper charge for stores, freight, and handling is included at the time either ticket is made and is

COST ALLOCATION AND CODING

Page_____of_____

Work Done By | Work Done By | Summary of Charges

Work Done	By	Work Done	By	Summary of Charges	
Transcribed from Account Analysis		Journal Closing		Material from Stores	Contract Charges
Costs Distributed to Units		Journal Closing		Stores Expense	Memo-Installation cost
Distribution to Units Approved		Journal Closing		Material from Vouchers	Sub Total
Coded		Journal Closing		Other Charges	Overheads
Reviewed for Posting				Company Labor	Interest During Construction..
IBM Cards				Ins. &payroll taxes	Transferred Equipment.....
Final Posting				Auto & other expenses	Total Charges.....

Distribution of Units Per Utility Plant Catalog	Mo.	Yr.	M Area	General Coding Data Co.	Town	Ln. Sub	Work order	Acct.	Unit Code	Quan.	Total cost	Material Cost Main	Material Cost Minor	Material Cost Total	Stores Expense	Labor Ratios Unit	Labor Ratios Total	Labor Auto, Etc.	Sub Tl.	Over-heads

EXHIBIT 2

computed on the basis of a fixed percentage of material costs, a percentage subject to change from time to time. All tickets are sent in to the main office where they are filled by work order number. The main accounting problem with respect to material issue tickets and returns is that of making sure the return slips apply to the particular work order to which they were debited or credited.

Labor, liability insurance, automobile expense, and all other charges applicable to the work order are accumulated in the field. Vouchers are prepared to carry these items and totals are sent in monthly to the main office. These accumulations are made in total on the job order and are not recorded by units, as in the case of material. For example, a job order might be issued for the installation of two poles including other units which are necessary to place the work done within the distribution system. Material is then listed in detail on the job order while other charges applicable to the job are included in total only.

When all costs have been received at the main office and the work has been completed, it is necessary to analyze each job or work order to obtain the proper charges to the various accounts within the fixed asset classifications, with the aid of ledger cards on which all monthly charges are accumulated by work order number. More than one job in the same town may be summarized together on a form entitled

Cost Allocation and Coding (Exhibit 2). Material slips and return slips for the particular job or jobs completed are taken from the files and arranged by accounts. For example, the following are some accounts listed under the distribution system:

1. Poles, towers, and fixtures.
2. Overhead conductors and devices.
3. Services.
4. Street lighting and signal system.

Material slips are further grouped according to items for material in order to make the listing on analysis paper more rapid. The name of the unit is listed with the net amount issued at the net price. Totals are made by accounts and all other costs are prorated on the basis of the dollar value of materials. This overhead rate is applied as a percentage of the total accumulated dollar values to this point. This rate is a charge applicable to all job orders (the stores, freight, and handling rate, already mentioned above, is a charge applicable to materials only.) The overhead rate is subject to change from month to month. The proper journal entry debiting the property accounts and crediting jobs in process is made from this summary. Of basic concern in this procedure for summarizing installation jobs is the accuracy of the proration of labor and other similar costs to the respective accounts on the basis of dollar value of materials.

Pricing Retirements—Job Order Known and Not Known

The job order system of property item cost accumulation has been described. Now it is necessary to see how retirements, based on these job orders, are priced. When it is known that a certain retirement was installed on a specific job order or work order, the material is priced from this source and installation costs are applied back on the basis of dollar value of materials. This is consistent with the manner in which the installation costs were prorated when the property was originally installed.

In many cases, however, the specific job order is not known and only the year of installation is given. Under these circumstances, the material is priced from any work order or job order which contains material costs for work done at the same location during the same year. Installation costs, other than material are not known, but a computation is made from this job order used. To illustrate this latter procedure, assume that one pole installed in 1939 is being retired, but that the job order is not known. Another job order is obtained from the files for the same location and dated 1939 and the retired price is computed for the pole as if it were the same pole listed on the alternate job. The latter procedure should hardly be sanctioned if better data were available but,

in most instances, there is no practical method of determining a price which is more accurate.

Cost and Retirement of Items Installed Before 1938

The discussion to this point has set forth the procedure used for property installations under the job order system which was not established until 1938. A look may be taken also at the situation before that date. In one ten-year period, the installation of property was made without any effective method of accumulating costs. No adequate identification was made of units retired with those units which had been installed. A material sheet was prepared in the eleventh year by an executive in the plant department of the company listing prices by units. These prices served as the basis for the pricing of retirements for property installed in this period. An estimate of installation costs on major units, including the associated minor items of material, was made by the same executive and total original costs applied to retirements upon these bases.

However, it is doubtful that the underlying estimates can be regarded as having a useful degree of accuracy especially when, in most cases, it is difficult if not impossible, to determine in what year the property was actually installed and the period covered was one in which changes in costs were relatively large. The method is only an expedient method of approaching the real problem of cost identification. If over a period of years, over-pricing or under-pricing of retirements has taken place, it would have the effect of creating erroneous proportions in all phases of the property account. These distortions might go unrecognized. In 1938, when job order costing was introduced, the problem was approached at the point of origin.

Requirements of a Satisfactory System

It appears that neither items installed prior to or during the operation of the job order system are satisfactorily priced on retirement. What should the company do? The difficulty of handling retirements correctly when incomplete records are kept is pointed out in an article by Earl A. Saliers (Accounting Review). He says:

> "The (usual) presumption is that when an item is retired it has been fully depreciated and, therefore, its cost is credited to the asset account and charged against the depreciation reserve. In many cases, this presumption is far from the truth, but owing to lack of definite information the proper adjustment against profit and loss, or surplus, is not made. The only practicable remedy is in the adoption of a system of item or limited group control. . . . Such a system implies that there will always be available information and estimates necessary not only for computing the periodic depreciation

charge but also for making the necessary adjustments upon retirement of a particular asset."

There are three important things to which special attention should be given in devising a solution to the problem of pricing property retirements. First, costs should be properly accumulated when property is installed. Second, ready identification of items retired should be possible. Third, retirements should, in fact, be traced back to their original cost. In terms of specific changes, one should not lose sight of the main problem, that is, the extent to which identification of each item should be attempted and, at the same time, avoid increasing clerical work which might make desired results too costly. The following are a few points which should be partly, if not entirely, solved to result in an adequate method for pricing retirements:

1. Some effective means by which the date of installation can properly be ascertained when property is being retired.
2. An effort to speed-up the routine work necessary to price out a retirement job.
3. A more equitable distribution of installation costs to items of material retired.
4. A closer correlation of installed material costs with the materials removed on retirement.
5. The establishment of a uniform pricing technique which will be applied consistently.
6. The proper handling of salvaged items and removal costs.

To accomplish the above objectives, extensive property records must be maintained. The solution as presented in the following paragraphs is partly based upon solutions of other companies. We know that these companies have faced similar problems with respect to pricing property retirements and many previously installed new systems to correct inadequate methods used in the past for the handling of retirements. Thus our company was able to obtain information concerning the solutions by other companies and to use methods which were felt to be helpful in solution of the problem. Nevertheless, many details had to be worked out for the company's own situation, including problems of transition. The system needs to be described rather completely, in order to present just what has been accomplished.

Recognition has already been given to the importance placed on the property ledger in connection with the tracing of property to its retirement in a subsequent period. The fact remains, however, that there are enormous amounts of property units in service. This volume places some limitations on the amount of detailed record keeping practicable. Minor items of material go together with major units in establishing these units of property. The extent to which a breakdown by small elements has the effect of facilitating analysis in the property ledger can be shown by at least two distinct points of helpfulness:

1. It offers the possibility of applying rates to the cost of small units and
2. It affords a more uniform means of pricing these small units on retirement jobs.

Unitizing Properties and Applying Trended Cost Prices

The introduction of a new system of fixed asset costing and retirement was not accomplished in a short time. The transition period represented many months. Some new forms were necessary and others required alterations to introduce specific advantages and new procedures. A more effective means was introduced for the numbering of job and work orders for installations, as well as those needed for retirement purposes. This afforded a more proper means of identifying varying types of work being done. There was also a classification of property by divisions. Details were studied for the installation of a coding system for property records on punched cards.

While the above matters were under consideration and in some cases worked out, plans were in process for the solution to the problem of pricing retirements. Although future costs on installations could be properly handled by procedures related to developments proposed in the above paragraphs, something had to be done with property already installed and which would subsequently be retired. If this should be neglected, it would be a matter of years before property records would be accurate. To solve this part of the problem 1935 was selected as a base year and all properties then installed were unitized (grouped and priced by units) for the purpose of arriving at figures on a price level from which retirement prices could be based. The selection of this base year is not too important from the standpoint of theory, as will be shown later, but it may be noted here that property costs in 1935 had passed the low costs of 1932 and 1933.

All analysis sheets which were made for the installation of property in 1935 were assembled by jobs to make the unitization. T-accounts were prepared and major units served as headings for each account. Minor items of material were listed under the associated major units and prices were accumulated. These T-accounts were totaled, thus giving the total of each unit. Totals were checked against the totals on the job itself. In many instances, it was difficult to determine the proper unit to which minor materials applied. In other cases, there was a greater or smaller number of minor items of material than ordinarily are needed for the installation of the unit. The judgment of the plant official supervising the unitization was necessary in these cases.

From this sheet, all information was transferred to another sheet which had columns for description, units, major unit prices (including minor items of material), labor ratios, labor costs; stores, freight, and handling, overhead, and total costs. These sheets were very similar to forms which are now used for analysis purposes when property is installed, as has been illustrated by Exhibit 2.

Each unit was listed separately and stores, freight, and handling were applied from totals taken off the job order. Labor ratios, which represent the number of hours necessary for the installation of a unit, were obtained from the results of a survey taken from divisional engineers. These ratios were listed, totaled and served as the basis for the distribution of labor costs to the unit. Other associated costs were also distributed on this basis. Totals were carried forward to a separate column and overhead rates used in 1935 were applied to each unit. Another total column carried the total accumulated costs and permitted, on division by the total number of units, a unit cost to be computed. Units were then coded. When all distribution properties installed in 1935 had thus been analyzed, cards were punched on each individual unit and tabulated to obtain the average unit prices.

This was fine for the year 1935 alone. We now had unitized properties and unit prices for them which had a fair relationship to cost. We proceeded then to unitize acquisitions of years before and after. Then we obtained index figures from a firm especially familiar with construction cost indices for electrical properties, trended them with 1935 as a base, and computed costs on all properties installed by years from 1927 to 1945. Retirement unit prices by years were listed on sheets to facilitate the retirement pricing of all properties installed during that period. We felt that the time spent on the unitization and pricing program was more than offset by the time that would have been spent on pricing retirements under the old system.

By the time the unitization program was progressing rather well, all new installations were unitized by jobs so that the 1949 retirement prices would not have to be based on a trended figure. Likewise, it is planned to unitize properties installed in 1946, 1947, 1948, and the portion of installments made in 1949 before unitization was started. All subsequent years will be unitized at the same time that the job order analysis is made. With the availability of punched cards for the accumulation of costs and the identification of property units, it remains to be seen just how far the employment of tabulating equipment can be successfully used to further advances in property accounting procedures. It is evident now that with the use of these machines more control is made possible, inasmuch as a property total can be made by divisions or other desired classifications.

Cost As the Preferable Basis for Charging Off Plant

A public utility operates to render service to the public without charging rates in excess of those necessary to afford it a fair rate of return. Inasmuch as rates

are based on the recorded value of the plant assets, the regulatory bodies are interested in keeping the asset values at figures which will not enable the utility to justify excessive rates to the public. By insisting that the recorded costs be those which were incurred by the person (company) first devoting the property to public use, the public utility commissions have assured the public of somewhat lower rates. However, in many instances loss has thus been sustained by a purchasing company, serious enough to impose a future burden. This now raises the question of determining whether original cost (with which this article has dealt up to the present point) or replacement cost is the more suitable method, of recording the periodic write-off of the plant assets. It may be said that one of the basic principles in accounting is the proper matching of costs and revenues. This would imply that costs incurred in a period are properly matched against revenues realized within it. It is from this principle that the subsequent discussion proceeds.

The cost to a company for the installation of particular properties is either the amount spent on material, labor, and overhead charges necessary to place the unit in operation or the amount paid to some other party for the installation of the unit which is ready for operation. In either case, it is an expenditure made from which future service is expected. In support of basing the periodic charge for depreciation on the amount of expenditure necessary to replace the unit in a current period, it is implied that the capital remaining intact will be sufficient and liquid enough to replace the unit. The soundness of this argument may be challenged. It is conceded that, in a period of rising prices, more capital remains intact by following the replacement cost concept but such an argument also applies to the followers of original cost in a period of falling prices. If capital is to be kept intact in one of the two periods, it seems more probable that it should be retained in the period of falling prices, for that is the period in which much financial distress is encountered.

The most important defense of the original cost concept is that it meets the requirements of matching costs and revenues (despite a contention that this matching should be on a cost-level basis). The basic reason for financial statements by periods is to reveal the results of the business by smaller component lengths than would be possible if the period extended from the inception of the business to its end. Basing depreciation charges on replacement cost violates the principle of matching costs and revenues, so interpreted. It is thus concluded that periodic charges should be based on original cost as in conformity with the principle of matching costs and revenues and also as keeping capital intact just as effectively as the use of replacement cost. However, original cost as defined by regulatory bodies is not in conformity with basic

accounting principles. Accounting statements should serve the needs of management and certainly a commission's requirement that a public utility comply with its definition of original cost would render these statements less adequate for this purpose. Separate statements could be prepared for the regulatory bodies, using costs as they require for rate-making purposes.

Considerations in Selecting Depreciation Basis and Method

When a fixed asset is purchased, there are two basic viewpoints from which the transaction can be handled. It can be considered as representing an element which continues in existence until the enterprise is liquidated or an element which eventually enters the cost stream, either at the time the asset is purchased or at some subsequent date. The going-concern concept of the corporation considers a business in terms of its on-going operation. For that reason, the fixed asset is not expected to out-live the enterprise. Thus, the first method is eliminated. Three alternatives exist with respect to transferring the investment in fixed assets to the cost stream. The period in which the asset is acquired can be charged with the cost of the asset or the period in which the asset is retired or the several periods in which the asset is in use.

The basic idea is the same in the first two instances. The distinction lies in widely different results for different periods of time. Further, neither of these two concepts recognizes the asset as a series of future services which are paid for in advance. Of course, it can be said that after a business has been in existence for a period long enough to have its plant assets at full strength, the effects of charging off installations (as in the first case) or charging off retirements (in the second case) to operations would be the same as depreciating the asset through a periodic charge. However, are these procedures theoretically correct? They certainly reduce the task of pricing property retirements to a minimum of effort. There would be no distinction then between repairs and replacements.

If a plant were kept at its full strength and so maintained for the entire existence of the enterprise and if the price level was constant, a proportionate number of units of property could be replaced each year and, thus, either of the two above procedures would in effect match costs incurred in one period against revenues of the corresponding period. But these assumptions are not warranted. The enterprise is continually changing capacities and the price level fluctuates from month to month. The necessity of statements for short periods makes it a requisite to properly match costs and revenues for *each period* for which a state-

ment is rendered. For this reason, some other method is needed than complete charge-offs at installation or retirement.

The one remaining method for the handling of the investment in fixed assets is one which periodically writes off an amount to operations. This amount represents the expired costs or the cost of the services used up from the prepayment. At the end of a series of periods, when the asset no longer has service value remaining, it is anticipated that the total depreciation charges will correspond to the original cost of the asset. This is assuming that salvage value is not considered.

The group method and the unit method of depreciation both meet the test of matching costs and revenues. The group method has the advantage of simplicity in applying rates to a smaller number of items. The theory on which group depreciation is based does not assume that every unit in the group will be retired at some specified date. Rather it signifies that some units will be retired before the cost of the group is fully recovered through the depreciation charge and others will be retired after recovery is effected. However, taking the group as a whole, these units retired prior to the effective date (when the rates are applied) are expected to balance those units retired after the effective date. Both the unit and group methods require the testing of the service life of each unit in the beginning in order to set a rate properly. The unit method then goes on to apply a rate to each unit based on its service life from previous experience. The group method takes several similar units with approximately the same service life and, from previous experience, bases the rate on the estimated life of the group.

Application of Group Method to Retirements

Under the group method it is not necessary to record the gain or loss on an asset when the asset is retired. This is based on the same principle as that one which is applicable to the establishment of a group rate. It is impossible to determine the depreciation charge applicable to any one unit when it is depreciated on the group basis. Therefore, gains and losses cannot be computed when a unit is retired. This procedure is, nevertheless, sound if the rates are determined properly because, as one unit is retired prior to that of the group as a whole, another unit is retired subsequent to the group as a whole.

When a unit of property is retired by the company under study, any salvage value realized from the property is credited to the reserve for depreciation. Any costs incurred by the company in removing the unit of property from service are charged to the reserve for depreciation. The difference between these two

figures is either added to or subtracted from the original cost of the property and the remaining figure is charged to the reserve for depreciation. Original cost is credited to the plant account to complete the retirement entry. Service value is the determining factor in computing the rates for depreciation, as no consideration is given for the anticipated salvage value or removal cost of the property when it will be retired.

Since it is not known by the company the extent to which the reserve has accumulated on a particular asset, no gain or loss is recognized on the retirement. In effect, if the cost of removing the asset equals the salvage value realized from the asset, the charge made to the reserve on retirement equals the credit to the asset account. However, it is not believed that the relationship between salvage value and removal costs is sufficient to assume that the two will tend to equalize, even in the long run. Consequently, some mismatching of costs and revenues results. For this reason, depreciation rates should take into consideration the cost of removal on, and the salvage value from, the asset retired.

Results Achieved

By following the definite procedures and policies outlined, relatively accurate figures have been produced which countermand the erroneous figures previously computed in pricing operations. We have unitized property records, average prices by years developed from 1935 as a base and are accumulating actual costs by units for current years. Our property retirements are no longer vulnerable to the criticism that we can not identify items or arrive at reliable original costs.

Margin and Cost Analysis for A Beer Wholesaler

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Noting at the start that the attention of most wholesalers must be on control of the costs of distribution, more heavily than prices at which they buy and sell, the present author portrays here, through text and exhibits, means of effecting such control over the hauling, warehousing, selling, delivery and other costs of a beer wholesaler.

A WHOLESALE DISTRIBUTING business generally does not control the purchase and sales price of the products which it handles. Its control of costs is limited to distribution costs. Hence the profitability of a distributing operation is generally determined by the extent to which it knows its distribution costs and is successful in controlling them. The accounting and management problems of a beer wholesaler are typical of a wholesale distribution operation.

The function of a beer wholesale operation is to distribute the brewery product to retail outlets. This distribution contemplates purchase from the brewery, delivery from the brewery, warehousing, sale to the retail outlet and delivery to the retail outlet. As indicated, the purchase price and sales price of the product are generally not controllable by the wholesaler and are not management factors but sales, warehousing, and delivery costs are the direct concern of the management and generally determine the margin of success of the business. To properly control its costs management must know the gross margin and cost data it needs and how to obtain it.

The first part of this article presents some of the gross margin and cost problems met by a wholesale beer operation and suggests methods of dealing with them. A series of operating and cost statements are supplied as exhibits to illustrate points discussed. An attempt is then made to evaluate cost data as a guide for effective management.

Means of Gross Margin Analysis

A wholesaler may distribute several brands of beer, each of which will have several types of packages. The quantity of beer varies for different types of packages. A practical and generally satisfactory method of determining the product unit to be used for cost purposes is to select the package with the great-

Quantity Comparison of Packages -
Effective January 1, 1957

Description		No. of Units per Package	Total Oz. Per Pkg.	Relation to 32 oz. Package	Selling Price per 100 ozs.	Margin per 100 ozs.
Beer A						
Pkg. #1	7 oz.	48	336	87.5	$ .923	$ .208
2	12 oz.	24	288	75.	1.003	.226
3	32 oz.	12	384	100.	.924	.214
4	12 oz. cans	24	288	75.	1.215	.243
5	1/2 bbl.	ea.	2,016	525.	.67	.139
Beer B						
Pkg. #1	7 oz.	24	168	43.8	1.17	.256
2	12 oz.	24	288	75.	1.01	.260
3	32 oz.	12	384	100.	.91	.208
4	12 oz. cans	24	288	75.	1.25	.226
5	1/2 bbl.	ea.	2,016	525.	.67	.114
Beer C						
Pkg. #1	7 oz.	48	336	87.5	1.07	.366
2	12 oz.	24	288	75.	1.34	.330
3	32 oz.	12	384	100.	1.17	.292
4	12 oz. cans	24	288	75.	1.41	.359
5	1/2 bbl.	ea.	2,016	525.	.75	.179

EXHIBIT 1

est sales volume and convert packages outside of a certain quantity range, and kegs also, to the equivalent of the selected package. However, the wholesaler must know the relative quantities for the various packages, for gross margin review and certain cost analyses. Exhibit 1 compares the relative quantities of certain packages in the instance illustrated. As shown, beer is packaged in bottles, cans and kegs. The bottles are packaged in cases and both the size of the bottle and the number of bottles per case vary. Cans are similarly packaged. Kegs are generally half barrels or quarter barrels.

A wholesaler must know the margin and margin percentage of each of the packages he distributes, because changes in relative sales volume of different packages will change the amount of total gross margin even though total sales volume is constant. Changes in total unit costs may readily be caused by shifts in relative sales volume of different packages. Exhibit 2 displays an analysis of gross margin by brand of beer and type of package. Gross margins by package change only when there is a price change. One cause of different gross margins is the cost of the container used. Gross margin frequently suggests sales emphasis for certain packages.

Gross Margin Summary
Year ended December 31, 1956

	Quantity in Cases	Sales	Cost of Sales	Gross Margin	% Sales $	% Margin
Beer A						
Pkg. 1 7 oz.	10,121	$ 31,375	$ 24,290	$ 7,085	2.6	2.6
2 12 oz.	34,012	98,295	76,187	22,108	8.2	8.1
3 32 oz.	72,990	259,115	199,263	59,852	21.6	22.0
4 12 oz. cans	43,475	152,163	121,730	30,433	12.7	11.2
5 1/2 bbl.*	21,899	56,280	44,673	11,607	4.6	4.3
Total	182,497	597,228	466,143	131,085	49.7	48.2
Beer B						
Pkg. 1 7 oz.	14,665	28,890	22,584	6,306	2.4	2.3
2 12 oz.	28,902	84,105	64,162	19,943	7.0	7.3
3 32 oz.	31,277	109,470	84,448	25,022	9.1	9.2
4 12 oz. cans	24,437	87,973	72,089	15,884	7.4	5.8
5 1/2 bbl.*	8,070	20,740	17,270	3,470	1.7	1.4
Total	107,351	331,178	260,553	70,625	27.6	26.0
Beer C						
Pkg. 1 7 oz.	5,412	19,483	12,826	6,657	1.6	2.4
2 12 oz.	22,920	88,242	66,468	21,774	7.3	8.0
3 32 oz.	12,818	57,809	43,453	14,356	4.8	5.3
4 12 oz. cans	25,784	104,426	77,868	26,558	8.7	9.8
5 1/2 bbl.*	1,056	3,041	2,313	728	.1	.3
Total	67,990	273,001	202,928	70,073	22.7	25.8
Grand total	357,838	1,201,407	929,624	271,783	100.0	100.0
Trucking costs from brewery (Schedule B-1)			10,974	(10,974)		
Breakage, etc.	380		988	(988)		
Adjusted totals		$1,201,407	$941,586	$259,821		

* Converted to cases on basis of 5-1/4 cases to 1/2 bbl.

Description	Unit of Measure	Selling Price	Cost	Margin	% Margin (Cost)
Beer A					
Pkg. #1 7 oz.	Case	$3.10	$2.40	$ .70	29.2
2 12 oz.	Case	2.89	2.24	.65	29.0
3 32 oz.	Case	3.55	2.73	.82	30.0
4 12 oz. cans	Case	3.50	2.80	.70	25.0
5 1/2 bbl.	1/2 Bbl.	13.50	10.70	2.80	26.2
Beer B					
Pkg. #1 7 oz.	Case	1.97	1.54	.43	21.8
2 12 oz.	Case	2.91	2.22	.69	31.1
3 32 oz.	Case	3.50	2.70	.80	29.6
4 12 oz. cans	Case	3.60	2.95	.65	22.0
5 1/2 bbl.	1/2 Bbl.	13.50	11.20	2.30	20.5
Beer C					
Pkg. #1 7 oz.	Case	3.60	2.37	1.23	51.9
2 12 oz.	Case	3.85	2.90	.95	32.8
3 32 oz.	Case	4.51	3.39	1.12	33.0
4 12 oz. cans	Case	4.05	3.02	1.03	34.3
5 1/2 bbl.	1/2 Bbl.	15.10	11.50	3.60	31.3

EXHIBIT 2

Review of Hauling, Warehouse, Selling, and Delivery Costs

Some costs vary with the weight of the package. An example is equipment operation costs. Others, such as sales and delivery commissions, may be inde-

pendent of weight. Package volume will also affect some costs such as equipment operation and warehouse occupancy costs.

The wholesaler generally purchases beer, f.o.b. brewery, although there are exceptions. The hauling of beer from the brewery to the wholesaler's warehouse may be done by the brewery, the wholesaler or by common or contract carrier. The wholesaler must be able to determine the cost of this hauling by brand of beer. Exhibit 3 below shows such a determination. The wholesaler must con-

Trucking Costs from Brewery - Year ended December 31, 1956

	Total	Brewery A	Brewery B	Brewery C
Cases trucked from brewery	365,928	186,523	108,356	71,049
Labor costs				
Drivers and helpers	$ 4,800	$ 1,300	$ 2,850	$ 650
Maintenance of trucks	727	50	542	135
Payroll taxes	221	70	116	35
Payroll insurance	110	30	65	15
Equipment costs				
Gas, oil, grease	524	24	349	151
Depreciation	2,000	100	1,350	550
Insurance	1,240	680	390	170
Bonds & licenses	523	290	163	70
Repairs	436	40	286	110
Road expenses	231		184	47
Tires	307		247	60
Mileage tax	109		89	20
Total	11,228	2,584	6,631	2,013
Costs attributable to increase in inventory	254	127	30	97
Cost attributable to sales	$10,974	$ 2,457	$ 6,601	$ 1,916
Cost per case received	$ .030	$ .013	$ .061	$ .027

EXHIBIT 3

sider the gross margin for a brand of beer in view of these hauling costs. A problem frequently met by a wholesaler who does his own hauling is that the equipment he uses is operating only on a part time basis measured by his sales volume. Generally, distance between the brewery and the wholesaler's warehouse is clearly reflected in these hauling costs.

The warehousing operation includes unloading the beer from the equipment, hauling from the brewery, maintaining it in the warehouse, and loading it on equipment for delivery to retail outlets. Exhibit 4 shows a tabulation of warehouse costs. It generally is impractical to determine warehouse costs by brand of beer because they vary little by brands and such information would be essentially valueless. However, if one brand is warehoused in a substantially different manner than others, segregation of costs might be advisable. For example,

Warehousing Cost Year ended December 31, 1956	
Cases Delivered	157818
Labor Costs	
Warehousemen	$2[illegible]936
Payroll Taxes	1037
Payroll Insurance	519
Occupancy Costs	
Allocation	1288[illegible]
Administrative Cost	
Allocation	8720
Total	$[illegible]8098
Cost per case delivered	$.1372

EXHIBIT 4

a constantly large inventory may be maintained for one brand, because of distance from the brewery, but not for others.

Selling costs which may be incurred to promote beer sales are strictly regulated by state alcoholic beverage control laws. Wholesalers must comply with the applicable law and regulations in regards to selling costs. Selling costs include advertising, displays and sales solicitation. Effective sales coverage is achieved by dividing the wholesaler's distribution territory into sales routes. The number of retail outlets per sales route will generally depend on the distance involved and the time required to solicit and service the sale. Selling costs should be distributed by sales routes for effective sales management. Exhibit 5 illustrates such a distribution.

Each sales route is generally covered by one or more salesmen. As a result, distribution of some selling costs such as sales commissions and car allowances present no problem. Other selling costs, such as radio advertising, do present distribution problems. There is good reasoning behind distributing such costs on a per case sold basis. Other costs, such as display advertising, may be dis-

Selling Costs by Route - Year ended December 31, 1956

	Total	Route No.1	No.2	No.3	No.4
Cases delivered	357,838	127,944	66,514	76,432	86,948
Selling costs					
Commissions	$28,251	$11,300	$ 4,520	$ 6,496	$ 5,933
Display labor	3,200	1,800	300	800	300
Payroll taxes	1,256	545	181	244	288
Payroll insurance	290	100	54	65	71
Travel	10,220	4,442	1,185	1,703	2,690
Advertising	2,413	1,206	275	420	512
Insurance	660	240	105	155	160
Special promotion	2,103	120	1,200	380	403
Estimated bad debts	1,200	900	-o-	100	200
Administrative allocation	17,018	6,077	3,744	4,522	2,675
Total	$66,613	$26,730	$11,564	$14,867	$13,432
Cost per case delivered	$ .1862	$ .2089	$ .1738	$ .1946	$ .1545
Number of retail outlets (average)	700	250	154	186	110
Cost per retail outlet	$ 95.16	$106.92	$ 75.09	$ 80.03	$122.10

EXHIBIT 5

Delivery Costs by Routes - Year ended December 31, 1956

	Total	Route No.1	No.2	No.3	No.4
Cases delivered	357,838	127,944	90,514	76,432	86,948
Labor Costs					
Drivers and helpers	$55,950	$18,410	$10,675	$12,638	$14,827
Maintenance-trucks	2,794	699	232	232	1,631
Payroll taxes	2,238	736	403	506	593
Payroll insurance	1,118	368	201	253	296
Equipment Costs					
Gas, oil, grease	5,032	815	794	803	3,220
Depreciation	4,648	1,859	930	930	929
Insurance	3,003	1,202	600	600	1,201
Bonds & licenses	2,130	710	355	355	710
Repairs	2,246	561	187	187	1,311
Road expenses	2,154	307	307	308	1,232
Tires	1,066	152	152	152	610
Mileage tax	1,037	148	148	148	593
Occupancy allocation	2,488	829	415	415	829
Administrative cost allocation	12,623	4,508	2,777	3,154	1,984
Total	$99,727	$31,304	$17,576	$20,881	$29,966
Cost per case delivered	$ .279	$ .245	$ .264	$ .273	$ .345
Number of retail outlets (average)	700	250	154	186	110
Cost per retail outlet	$142.25	$125.22	$114.13	$112.26	$272.42

EXHIBIT 6

tributed on a per stop basis. The method used depends on knowledge of the facts, judgment and consistency. Efficient sales operation frequently demands that a particular retail outlet be given special attention to promote the sale of a certain brand or product there. Generally, this selection is made because management believes the outlet has an unrealized sales potential. The cost of this special attention, such as increased display and sales labor costs, should be segregated and treated as a specific cost element. One of the items of cost included in Exhibit 5 reflects this concept.

The distributor's territory is divided into delivery routes, which generally are identical with the sales routes. Delivery costs are distributed on this basis. Exhibit 6 is illustrative. Each delivery route is serviced by one or more trucks. The size and number of the trucks will vary with sales volume, distance and delivery facilities at the retail outlet. Distribution of delivery costs by routes presents few problems because of their direct relationship to miles traveled, delivery commissions, or delivery time spent.

Allocation of Occupancy Costs - Year ended December 31, 1956

Occupancy Costs	Total	Method	Allocation: Administrative	Warehousing	Delivery
Maintenance labor	$ 7317	C	$1179	$ 5414	$ 724
Payroll Taxes	293	C	47	217	29
Payroll insurance	147	C	24	108	15
Depreciation	2405	A	240	1685	480
Property taxes	2400	A	240	1680	480
Heat	2300	B	920	1081	299
Insurance	1239	A	124	867	248
Outside Services	1020	C	-o-	953	67
Light and power	733	A	73	514	146
Repairs	365	C	-o-	365	-o-
	$18219		$2847	$12884	$2488

Allocation Methods

A - Actual floor area	10%	70%	20%
B - Estimate	40%	47%	13%
C - Labor distribution records, invoices			

EXHIBIT 7

Allocation of Administrative Costs - Year ended December 31, 1956

Administrative Costs	Total	Method	Selling	Warehousing	Delivery
Management Salaries	$12500	A	$ 6250	$2500	$ 3750
Office Salaries	9811	A	4905	1962	2944
Payroll Taxes	552	A	276	110	166
Payroll Insurance	133	A	67	26	40
Travel Allowance	2890	A	1445	578	867
Insurance	789	B	263	263	263
Professional Fees	4420	C	442	1989	1989
Donations	790	B	263	263	264
Dues & Subscriptions	639	B	213	213	213
Interest	426	C	43	192	191
Bonds & Licenses	829	B	276	276	277
Telephone	1735	A	867	348	520
Occupancy Allocation	2847	D	1708	-o-	1139
	$38361		$17018	$8720	$12623

Allocation Methods

A - Labor distribution records, invoices	50%	20%	30%
B - Estimate	33-1/3%	33-1/3%	33-1/3%
C - Estimate	10%	45%	45%
D - Actual floor area	60%	-o-	40%

EXHIBIT 8

Housing must be supplied to the warehousing, selling, delivery and administrative functions. Exhibit 7 offers an illustrative allocation of the cost of such housing to these functions. As set forth, the allocation is on the basis of housing facilities used. Also, the administrative function supplies services to the warehousing, selling and delivery operations. Exhibit 8 allocates the cost of such services on the basis of services rendered. Proper allocation of distribution costs to brands requires at least the following information. To allocate to the various brands costs of hauling from the brewery, the wholesaler must know brand volume by weight, equipment and labor used, distance and equipment and labor time consumed. If warehousing costs are to be allocated, the wholesaler must know brand volume by weight, equipment and labor used, space used by volume, time, equipment, and labor time consumed. Allocation of selling costs contemplates knowing route sales volume, route distances, number of retail outlets per route and special promotion efforts. Allocation of route costs requires data on route sales volume, equipment and labor used, route distances, number of retail outlets per route and equipment and labor time consumed. Allocation of occupancy costs and administrative costs requires information as to these facilities and services provided for each operating function. Compilation of the above information requires the preparation of all necessary source records.

Sundry Problems

A brief mention of the following problems will suggest that the wholesaler has much to watch. Physical inventories disclose shortages between beer purchased and beer sold which are generally caused by breakage and similar reasons. These shortages are accounted for in the gross margin statement already shown in Exhibit 2. Containers such as returnable bottles, case shells, and kegs are generally the property of the breweries and do not affect the income or costs of the wholesaler. However, he may be responsible for damage to them. Most wholesalers must make special deliveries to retail outlets which run short of beer or have received a wrong delivery. The cost of such service can be high and should be segregated and included as a specific item in route costs. The exhibits do not reflect this item of cost.

Also, in some areas of the United States a beer wholesaler is seriously affected by seasonal variations in volume. These variations are relatively balanced over the period of a year, but results of periods of less than a year vary greatly. Cost allocations for such interim periods must consider the different levels of activity caused by the seasons. Some states require the payment of all invoices for the

purchase of alcoholic beverages by a certain day of the month. Such a requirement normally increases sales during the early part of the applicable period and decreases them during the latter part of the period. This causes an unbalanced sales distribution over the course of a month. These factors cause cost distribution problems, and more important, cause complex operational problems.

Cost Data as a Guide for Management

Unit cost data is of material benefit to the beer wholesaler. By the very nature of the business and product, sales volume is not accurately predictable. It is a variable which directly affects net operating results and operating costs. Absolute cost comparisons are of limited value because most of them have been

Statement of Income and Costs - Year Ended December 31, 1956

Statement of Net Income

		Total	% Sales	Per Case
Sales	Exhibit 2	$1,201,407	100.0	$3.357
Cost of Sales	Exhibit 2	941,586	78.4	2.631
Gross Margin	Exhibit 2	259,821	21.6	.726
Selling Costs	Exhibit 5	66,613	5.5	.186
Warehousing costs	Exhibit 4	49,096	4.1	.137
Delivery costs to retail outlets	Exhibit 6	99,727	8.3	.279
		215,436	17.9	.602
Operating income		44,385	3.7	.124
Estimated income taxes		20,000	1.7	.056
Net income.		$ 24,385	2.0	.068

Statement of Operating Income by Routes

	Total	Route No. 1	No. 2	No. 3	No. 4
Gross margin (at $. 726 per case)	$259,821	$92,887	$48,289	$55,490	$63,155
Selling costs (Exhibit 5)	66,613	26,730	11,564	14,887	13,432
Warehousing costs (at $. 137 per case)	49,096	17,528	9,112	10,471	11,985
Delivery costs to retail outlets (Exhibit 6)	99,727	31,304	17,576	20,881	29,966
	215,436	75,562	38,252	46,239	55,383
Operating income	$ 44,385	$ 17,325	$10,037	$ 9,251	$ 7,772
Percentage	100.0	39.0	22.6	20.9	17.5
Per case	$ .124	$ .135	$. .151	$ .121	$ .089

EXHIBIT 9

Form for Comparison Actual and Standard Delivery Costs

Month Ended _____ ____ 19____

	Total	No. 1	No. 2	No. 3	No. 4
Cases delivered					
	Standard cost per case				
Same cost breakdown as on Exhibit 9					
Total - standard					
Total actual - Exhibit G					
Variance					
Items of variance					
Drivers and helpers					
Tires					
Administrative cost					
Small variances					
Variance as above					

EXHIBIT 10

influenced to an undetermined degree by sales volume. Unit costs automatically adjust to sales volume and are an invaluable management tool. The case is an accurate and practical unit for cost determination if it is based on the package with the greatest sales volume and adjusted for substantial quantity variations shown by other packages. Gross margins per case form a valuable guide for sales activity and should be under constant review. Cost per case for hauling from the brewery, warehousing, selling and delivery should be under regular observation. The level of these unit costs and sales volume dictate the degree of success of the entire distributing operation. Exhibit 9 is a Statement of Income and Costs which shows operating results for the entire operation and illustrates also certain unit cost data for review by general management.

The value of cost data for effective management is substantially increased if management has other data available for comparison. One source of such data is performance of prior periods. However, this type of comparison has limited value. Comparison should be based on standards which represent effective and efficient performance.

Comparison of current performance with standards discloses operating variances to management. A suggested form for comparison of actual and standard costs is set forth in Exhibit 10. After management has investigated these variations, it is in a position to know where to direct action to correct sub-standard results. Correction of sub-standard results should produce maximum operating efficiency for the distributor.

A Lot Cost System for a Textile Finishing Plant

by RAYMOND N. WALSH

Accountant, Cranston Print Works Company, Cranston, Rhode Island

How a comprehensively designed and systematically used cost card is employed in the textile conversion operations conducted by this company for its customers, is detailed in this article. The card described serves as a vehicle of lot cost accumulation, a means of order profit determination, a tool for operating control, and a basis for work-in-process inventory computations.

THE COMPANY using the system described in this article is a service organization operating three plants (two in New England, one in the South) which bleaches, prints, dyes and finishes annually about one-quarter of a billion yards of fabrics for its customers. These customers, called converters, own the cloth which they have woven on contract or purchased on the open market and employ the finisher to execute their ideas in design and color for them. The converter sells the finished fabric to garment cutters, mail order houses, wholesalers and retailers who offer it to the consumer in catalogs or stores throughout the country in the form of men's and women's shirts, shorts, blouses, pajamas, dresses, bathing suits, draperies, etc., or as yard goods for the housewife to use in producing her own creations. It goes without saying that such an industry is subject to the whims of fashion and must be sensitive to the desires and needs of the public. A popular, high-volume line can lose favor very quickly if a new styling trend appears.

In a highly competitive business such as this, with profit margins often measured in fractions of a penny per yard, it is of paramount importance that the finisher know exactly what his costs are in order to quote prices on a sound basis. Having done so, an alert management will desire to delve behind the profit and loss statement to check on the profitability of work performed for each customer or, what is more important, determine whether any operations were not profitable and be guided accordingly in accepting future business. The lot cost system described was developed to fill such a need. The profit or loss on each lot may be quickly ascertained as soon as it is billed and, by transferring detailed information to tabulating cards, there is made available to management soon after the end of each month the results of operations for every customer during that period and for the year to date. In addition, great deal of statistical information regarding types of work, material and

Production Order and Cost Card Order
(face of Form)

LOT NO. 15161 — LOT NO. 15161

VST. Pretty Prints, Inc. — STYLE 4341

CONST. 37" 100 x 60 4.00 — GRADE Supreme

FABRIC Mercerize — Framed Yes 35½" — Class Shirting D — Reprint Yes (see lot 14059)

PRINT AND DYE 1 Side Print; Dyed

Patterns and colors as samples attached - Match exactly - Submit sample for approval

Finished Width 35/36"

FINISH Sanforize

Tickets: Pattern No., Color, Yards, Lot No., Style Supreme

PUT-UP Long Fold — Mill Lengths — No Papers — Work Loss 5%

Special Instructions: Shipping Instructions Later

Grey Application: (2826) 60,000 Yards Barrington Mills

SCHEDULE

Grey	Cut	Print	Dye	Soap	Starch	Sanf.	Sh'fy	Cal	Cure	Scour	Dry	Fold	Pack	Close
3/1	3/5	3/11	3/9	3/13	3/14	3/14						3/18	3/19	3/20

Lot Number	Cust. Ser.	Yards	Design	Finish	Bl.	Com.	Lot Date	Date	Grays Rec'd	Sub'd
15161	2781	60,000	1896	1-S-M-S	B	4	5/1	3/20	2/28	3/1

DST. & LOT NO.	GREY YARDS	CODE	COLOR COMBINATIONS	PRINT YARDS
	20,000	A	Yellow Grey Dye Green Formula No. 737-175 DYE BEFORE PRINTING	

Cost Card (reverse of Form)

Weight
Finish
W/L
Posted to Design Cards — Date — By

CRANSTON

STARCH 3/14/57

Cust. 327 Lot 15161
Design 1896
Class 3711 - 080
Bill No. 1936 Month 3
Grey Yds. 60,000

		Yards/ Hours	Cost Rate	Cost Amount	Actual Revenue	Gain/ Loss
PRINT 3/11/57	Basic Rate/Yard	Grey				
	Print Machine Hours		$			
	Color Cost	XXXXXX	XXXXXX			
	TOTAL PRINT					
	TOTAL EXTRAS					

Grey Yards	Guar. %	Guar. Return Yards	Price	Billing Loss	Anticip. Rev.
				XXXXX	
				XXXXX	
Perfects			XXXXX	XXXXX	
Sec's to 5%			XXXXX		
Sec's over 5%					Total
Excess W.L./D					
Adjustments					

EXHIBIT 1

labor costs for printing and dyeing, yards sold of the various special finishes, etc., is available for analysis.

Process Lot, Cost Card, Basis of Costing

Instructions received from a customer are interpreted by the order department and released to the plant in the form of a process lot (top of Exhibit 1) identified by a lot number. Some lots are processed with others requiring the same printed design, some are put through on an individual basis. If different cloths are being processed, separate plant orders are made out so that the fabrics will not become mixed when packed into cartons. Also, different weights may require the use of different standards. Each department in the plant which will handle the goods receives a copy of the process order. The cost department also receives a copy in the form of a card with the process lot appearing on one side and cost form (bottom of Exhibit 1) on the reverse. This card is filed with others in numerical sequence by a lot number in an active file. Cost details are posted as reported from various centers and the card is kept in this file until a duplicate finishing bill is received, indicating completion. Work-in-process inventories are drawn off from this file monthly, also. (An explanation of that application is given later in this article.) A mixture of actual and standard costs is the costing basis. An understanding of the basic use of the cost card will make it easier to follow the various steps involved in obtaining the inventory. Because of the infinite number of color variations, each with its own specific formula, it is very difficult to establish any degree of standardization. Therefore, actual color costs for printing and dyeing are used. All other costs are at predetermined rates, arrived at in the usual manner, either on a yardage or machine hour basis. To simplify posting and reduce space requirements on tabulating cards, all costs extensions and revenue amounts are rounded off to the nearest dollar.

In preparing this descripition, emphasis is placed on printed and dyed lots as the bulk of our work falls into that category and the system is thus explained to show its fullest advantage. However, it should be noted that not all print lots are dyed nor are all lots printed. Some lots are processed as plain whites or plain dyes only. Essentially, the procedure is the same, although fewer production departments are involved in the latter cases.

In the box at the top of the card, the customer code number is entered, as well as the lot number, design number and the grey (ordered) yards figure, which are posted in accordance with the process order. The class code number summarizes the following information: the first two digits signify the type of work printed (i.e., dress goods, shirtings, pajamas, etc.), the third digit indicates whether the cloth

PRINTING COST DISTRIBUTION

Lot No. : 15161 Yards: 60,000
Class 3711 - 050 Date Printed: 3/11/57

	RATE	AMOUNT
Basic Rate/Yard		$
P. M. H. Cost ——— Hrs.	$	
Color Cost	XXXXX	
Total Print Cost	XXXXX	
Print Revenue		
Gain or Loss	XXXXX	
Standard Gain/P.M.H.	$	
Variance	XXXXX	$

EXHIBIT 2

has been printed on one side or both sides, the fourth digit designates the basic cost rate per yard for printing, the final digits, following the dash, represent the price class.

Applying Printing, Dyeing, and Finishing Costs

The printing process is considered to be the key step in the costing of each order. For that reason, details regarding experience on each design are worked up immediately after printing so that actual costs can be compared with the standard set at the time a price classification was assigned to the pattern. Labor reports furnished by the print machine operators and material consumption figures supplied by the color shop are utilized. A design card bearing a swatch of the printed pattern is prepared. Attached to the card, for review by management, is a Printing Cost Distribution Sheet (Exhibit 2) which gives a quick estimate as to the profitability of this operation well in advance of the time when the lot will be closed and billed. In addition, this distribution sheet provides all the information needed to complete the print section of the cost card.

The print revenue amount on the distribution sheet is an estimated figure and may differ from actual billing slightly, due to reduced finishing charges on any goods graded as seconds during final inspection. The basic rate per yard figure covers the cost of

DYE COSTS

Date: 3/10/57

Formula Concentration 125 Gallons Used 450 Machine No. 3 Formula Number 1891 - 125

Method: (pad steam, jig, pad jig, etc.) Continuous Shade Name Grey

Lot No.	Customer	Cloth Weight	Design	Ordered Yards	Weight	Formula	Price	Amount
15161	Pretty Prints	4.00	1896	20,000	18#	Grey CM		
					46#	Caustic		
					46#	Hydro		
		Machine Hours: 6.7			12#	Casterol		
					16#	Albone		

Yds. per Gallon	Cost per Gallon	Cost per Yard	Efficiency Percent

No. 4331

EXHIBIT 3

taking the goods through all of the departments that every yard of cloth normally would be handled in, regardless of whether or not it was dyed or a special finish applied. This "regular finish" rate includes such preparatory operations as laying out of the grey goods from the bales, sewing the pieces into one continuous length, singeing to remove lint and fuzz, bleaching, and post-printing processes such as soaping, framing, folding, invoicing and packing.

Dyeing may be performed before or after printing, depending on the effect desired. Labor and material consumption figures are reported (Exhibit 3) by the dye house as soon as each color combination is completed. Material prices are inserted and extended by the cost department. It will be noted that the form shows the type of dyeing method used. This is important, as production, expressed in yards per hour, varies widely with the type of dyeing, as does the labor charge. It is essential that the proper rate be applied. Since, in some instances, several days may pass before all color combinations can be dyed, this information is accumulated by posting to the process copy side of the cost card and then transferred in total, after the last dye report is received, to the appropriate section of the cost form. As Exhibit 1 shows, some rates are on a yardage basis, others on a machine hour basis.

Finishing, in the broadest sense, can be defined as all of the operations or processes to which the cloth is subjected after it leaves the weaver's loom. Special finish, as we use the term, is a final treatment, chemical or mechanical in nature, which adds to the utility or serviceability of a fabric or improves its appearance or feel. Standard cost rates which, in some cases, include provision for royalty payments for use of copyrighted labels or patented processes, as well as formula, labor, and other costs, are used for each type of finish and, for tabulating purposes, a code number is assigned which identifies both the finish and the rate. Extension of these rates is always by the grey yards total as shown at the top of the card.

Some customers require that their goods be put up in a special manner, such as doubling the cloth over from selvage to selvage so that it is only one half its finished width and then having it rolled at specified lengths on paper boards. Another type of special put up, or extra, requires the cloth to be rolled at full width on round cardboard tubes. These operations are costed at standard and, here again, a code number identifies the operation and rate.

Determining the Order Gain or Loss; Control of Billings

The order is now completed and ready for billing. All bills are made out by and sent from the general office. When rendered, a copy of the

CRANSTON PRINT WORKS COMPANY

Pretty Prints, Inc.
261 Madison Avenue
New York, New York

Bill No.: C 1936
Date: 3/31/ 1957
Our Lot: 15161
Your Lot: 2781

DESIGN	STYLE	ITEM	QUANTITY	PRICE	AMOUNT
1896	4341 Supreme	PERFECTS	54, 150	08	4332. 00
		Seconds up to 5%	3, 000	. 04	120. 00
		Seconds over 5%			
		Total Invoiced	57, 150		
		Yards to equal grey	2, 850	Working loss	

SANF. CODE A	5%		YDS.	Total grey & finish	60, 000		4452. 00
Account	@	Amt.	Total				
Print	5		2782. 00	Case feet			
Extra				Carton feet	2, 127	. 08	177. 36
Dry or bleach	2		1112. 00	Minimum Cartons			
D. or B. extra				Bundles			
Mercerize	1/2		279. 00	Postage			2. 10
Sanforize	1/2		279. 00	Open stock			
D & R YDS.						Total	4631. 46
R. O. T. YDS							

Total finishing	200	4452. 00
Packing supplies	205	177. 36
Postage	562	2. 10
Open stock	375	
P. S. Labor		
Packing labor		
Total		4631. 46

EXHIBIT 4

finishing bill (Exhibit 4) is provided to the cost department. The total amount charged to the customer is broken down by revenue account. To ascertain the gain or loss, is simply a matter of entering these amounts on the cost card and comparing them with the cost totals for each operation. Cartons, open stock and similar items are not considered part of the finishing cost and are not covered on the card.

At the bottom of the card, there is a section used for analyzing billing losses. Here the difference between the anticipated billing, which assumes the maximum attainable return, and the actual billing is presented. This information is useful in comparing billing loss experience at the different plants. Also, what is more important, it makes possible accumulation of data by which an over-all percentage factor for billing loss can be computed and included as an item of cost when determining selling prices.

At this point the cost card is com-

plete and ready for punching on tabulating cards. It should be explained here that each division of the company has its own cost section which is responsible for producing the completed cost cards. Machine accounting equipment is maintained only at the general offices to which the cards are sent for auditing and tabulating. Four principal cards are those used to record in detail all of the elements involved in arriving at the gain or loss total. The first section of each card contains common information, providing full lot identification data that may be required when making an analysis. The first card gives all necessary details regarding print costs and the gain or loss figures only for each of the remaining section of the cost form. If a simple gain or loss report is required, it is necessary to tabulate only this card, materially reducing the time needed to produce the report. The second card contains complete dyeing information while the third card sets up details pertaining to the special finish and extras portions of the cost form. A fourth card records the billing loss figures. To insure accuracy, all cards are key-punch verified. In addition, cards are processed in groups and tapes are taken of key totals, such as grey yards and finishing revenue. The tabulated totals, in a check run, must agree exactly with these tapes.

So that the cost department will know precisely what lots have been billed, the billing department provides a duplicate copy of each sheet of the finishing sales register. The sales register, with separate pages for the different divisions, indicates the customer name, lot number, bill number and date, total finshing sales, total other charges and total billed amount. As copies of the bills are received, notations are placed against the bill numbers. When the cost cards have been completed and forwarded to the tabulating department, a second check mark is entered. After punching, the key-punch and verifier operators stamp their initials on the cards and return them to the cost department where a final checkmark is made on the sales register. Thus continuous control is maintained to prevent any bills, or cards to which they are attached, from going astray. If a particular bill or card is being sought at any time, a glance at the register will disclose at what stage of the clerical routine it may be found. Also, of course, this assures complete agreement with the finishing sales figures for the different plants.

A preliminary report by customer is run for each division and adjustments are made to provide for variances from standard costs and other factors affecting operations for the period, as divulged by the general ledger. A second run, incorporating these adjustments, produces a report totaled "Summary of Finishing Sales Showing Gain/Loss Based on Individual Lot Costs." This report reveals in a con-

cise manner, the results of plant operations for the period covered. Whenever required by management, any of these figures may be examined in greater detail by tabulating the itemized data contained in the various punched cards.

Work-in-process Inventories: The Process Positions

Once the lot cost system was functioning successfully, the next logical step was to utilize the information it contained to produce the major portion of the work-in-process inventories each month. Whereas it originally was the practice to fill in the greater part of the cost card after billing, now the different sections of the card are posted as the lot progresses. Two beneficial by-products of this change are the swifter completion of cost cards, once the bills are received, and a reduction in posting errors, as it is now possible to concentrate on one phase at a time. Because the billing pace picks up during the closing days of the month, a great deal of pressure is taken off the cost department during that period. The principal advantage of this conversion, of course, is that the time required to produce the inventories has been reduced by several days, with less clerical effort expended and greater accuracy achieved. Inventory positions, each of which adds its own valuation increment, are these:

Position 1—White room—Since, as was mentioned at the beginning of this article, all of the goods we handle are the property of our customers, a complete accounting is required for every yard shipped into our plants. Before printing, these goods may be in the grey, with no process valuation, or in the white state with the cost of bleaching and, in some cases, mercerizing added. When goods are put into bleach, they are taken out of the grey inventory and added to the customer's white inventory. The yardage involved is kept in the white inventory until an order is reported printed. It is then dropped from this inventory and picked up on the lot cost card, as noted below. The total yards held in the white state on the last day of the month are reported to the cost department with bleached and bleached-mercerized yards indicated separately.

Position 2 — Dyeing — Standard and actual (dyestuff) cost amounts representing the processing accomplished in this division through the accounting period are posted to the cost cards. The date upon which the entire lot was completed is entered in the space provided on the cost card. Partly processed as well as completed dye lots are considered in determining the work-in-process inventory value.

Position 3—Printing, aging and soaping—A report is issued every morning by the print room which lists every lot on which printing was completed the previous day. The corresponding cost cards for these lots are located and the report date noted in the blank space under caption "print", as shown on Exhibit 1. This establishes the valuation of the lots through the soaping department. A printing cost distribution sheet must be received for every lot reported printed before the inventory can be taken. Valuation for this position also includes the allied aging department.

Position 4—Starching and framing—Orders completed through the starch room are reported to the production control department daily. After posting its records, the production control unit forwards this report the same day to the cost department. Cards for the lots listed are pulled out of the file and the report date entered in the box provided at the top of the cost card. On regular finish lots, starching and framing are the final processing operations. (At this point, all print and dye cost information should be complete. If any costs are missing, immediate investigation is made and the required figures obtained.)

Position 5—Special finish—Lots completed in the special finishing department are reported each day and the date is noted on the cost card under the proper heading. Codes and

rates for all special finishes applied are filled in.

Position 6—Folding and packing room—The folding room reports completed lots in its department in the same manner as the starch room. No posting is made to the cost cards but each lot is checked to make sure a starch or special finish report has been received. This is a control operation only, picking up any lots inadvertently omitted at either of those positions. On inventory day, the folding room foreman simply reports how many yards of finished goods he has in his department.

Position 7—Yards invoiced, not billed—The plant office submits a report listing by customer and lot number all of the open lots on its records as of the end of the month. This list must agree exactly with the cards in the cost file. Since, with the orderly flow of goods through the plant, some yardage may have been invoiced into cartons, although the balance of the lot may still be in the finishing or folding departments, this report also shows the total of such yardage. More will be said about this particular item later. The term invoice, it should be explained, refers to a form which identifies the goods and shows the different colors packed, the yards in each piece, the number of pieces, the total yards of each color and the total yards in the carton.

Every carton has its individual invoice which is typed as the cloth is being placed in it. One copy goes into the carton before it is sealed, other copies are kept for the plant records and at least one copy is mailed to the customer immediately. All such goods in cartons are commonly referred to as invoiced yards.

Position 8—Yards closed, not billed—Occasionally, bills on lots which have been completed and dropped from the plant's open lots file are temporarily held up in order to straighten out some technicality. The billing department gives the cost department a report concerning these orders, as they must be considered along with the invoiced yardage as reported in Position 7.

Inventory-Taking Procedure

Any lot on which processing has been reported is a part of the work-in-process inventory and remains as such until removed from the file by billing. Positions 2, 3, 4 and 5, which account for the major portion of the inventory valuation, are taken from the lot cost cards. The active cost card file is kept in two sections. The first, called the in-process file, includes all lots on which processing has been reported up to and including Position 3 (print, age and soap). The second section, referred to as the finished file, contains all lots complete through Position 5. Processing costs are fully posted on these cards, although no extensions have been made except for those taken directly from the printing cost distribution sheets, and they are kept separate to reduce the bulk of the in-process file to which further postings will later be made.

The tabulating department transfers all the information required for the inventory from the cost cards to punched cards and produces a report, with complete supporting details, which shows:

1. Total printed yards in Position 3 (processed through soaping) with actual print machine hours and color cost.
2. Total printed yards in Position 4 (processed through starching), with actual print machine hours and color cost.
3. Total printed yards in Position 5 (processed through special finish), with actual print machine hours and color cost.
4. Total yards dyed and total machine hours for each dyeing method, plus actual color cost, for every lot in Positions 3, 4 and 5.
5. Total yards of each special finish on lots in Position 5.

Yardages on part-printed and part-dyed lots, with machine hours and color costs, are added to the tabulated totals.

Valuing the inventory is simply a matter of arranging the items in a

logical order on summary sheets and multiplying these totals by the appropriate inventory factor. The rates used for Positions 6, 7 and 8 are increments for those positions only, the cost value of processing performed being included in Positions 4 and 5.

An important factor to remember in the commission finishing of textiles is that the sale is made at the time the converter sends in his order. It remains for the mill only to carry out his instructions before rendering a bill. As soon as each carton or case of finished goods is packed, technically it can be billed. (As a practical matter, billing is delayed until the entire lot is completed.) Because of this situation, it can be seen that the real inventory value per yard of goods in cartons is the selling price. For this reason, the cost value of all goods in cartons not yet billed is deducted from the work-in-process inventory and the sales value substituted. This is accomplished as follows:

1. A column on the open lots report indicates the yardage invoiced against any lots listed thereon as of the inventory date.
2. When reconciling the report with the lot cost file, the invoiced yards is posted on the top of the cost cards.
3. The tabulating department picks up this figure as well as the grey yards on each lot.
4. Lots with invoiced yards are tabulated on the same sheets as other lots in the inventory but in a separate section.
5. The per cent of yards invoiced to grey yards is computed. This percentage is applied to the total machine hours and color costs on these lots for printing and dyeing and the resulting figure deducted from the cost value of the inventory. As not all print lots are dyed, different percentages will be applied for the two operations.

   Example:

   $$\text{Yards Invoiced } \frac{50{,}000}{200{,}000} \text{ Grey Yds. in process} = 25\%$$

   Total print hours 750.0 x 25% = 187.5 hours deducted from inventory

   Total color cost $2,500 x 25% = $625 deducted from inventory

   Similarly, the yards packed are broken down by the various finishes and their valuation deducted.
6. By consulting the pricing department's records, the billing price per yard for printing, dyeing and finishing each lot is ascertained and the total sales value added back to the inventory.

Tool of Management

In addition to the savings attendant upon the installation of this system, numerous intangible gains have been scored. The most prominent of these is that management has been provided with a tool which furnishes a diversity of information promptly, with accuracy. The ready availability of this information by product line, customer, sales area, individual lot, etc. is most important, principally because, as commission finishers, we are part of an extremely competitive, highly-diversified processing industry.

Looking Towards Standards for Control of Distribution Costs

by CHARLES H. MARTIN

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The special character of distribution costs is descriptively silhouetted in this general review of the possibilities which control standards may have in this area. Functional analysis of the costs of the distribution process is presented as the first step.

A DISCUSSION of distribution costing today appears to obligate a writer to state that little has been done toward developing a set of techniques for analyzing and controlling this group of non-production costs. Of course, many companies have already devised approaches to the problem and have successfully effected substantial savings in the cost of various distribution activities. However, for most companies, the next job on the agenda for the cost accountant is to delve into this troublesome and uncharted area of costing. Distribution costs represent all those incurred beyond the point of manufacture. In order to narrow down our discussion, this paper will cover only the selling function, including promotion and warehousing but excluding administrative and financial expenses of distributors.

Joint Costs Prominent in Distribution

The approach to costing distribution must be distinguished from the approach to costing production. In accounting for manufacturing costs, identifiable quantities are involved and the process to which they are subjected is mechanical. In accounting for distribution costs, however, we cannot so easily identify the quantities with the costs incurred. There are many instances in which there are no quantitative factors at all and it become necessary to use a qualitative basis for measuring the results of performance. The efforts of sales promotion in one territory may be rewarded with amazing results, whereas a similar effort in another (and like) territory may end in frustrating results. The lack of consistent results in distribution stems from the uncontrollable factors made up of the habits of the buying public, the timing of the sales effort, or the countless changes which may occur in the sales potential in a territory.

It is necessary to adapt costing methods to meet these problems. In the attempt to make an alignment of the distribution costs with the products being distributed, the principal objective

is to set up a procedure for a breakdown of direct expenses and to adopt a sound method for an allocation of indirect expenses. Our experience in production costing for joint products is of value. When two or more products are manufactured side by side without separate identifiable costs, it is necessary to adopt some method of cost allocation, such as a basis of units, market value, or some combination of factors. In distribution costing, at best, only one or two groups of direct costs can be isolated. However, we have noted that indirect costs are subject to allocation. These must be kept up to date for change made in the relationship of the various products and a restudy of the problem of allocation.

From Functional Analysis to Control

In order to cope with the problems of achieving a satisfactory costing program for distribution, it is necessary to modify our traditional expense classifications and adopt a classification along functional lines. What are functional lines? In our analysis of the selling end of the business, there are a number of activities which can be identified separately. Generally, the responsibility of an individual follows the specific line of a function. In order to measure the cost of a function, it must be well-defined and small enough, so that the details of the work performed are of a homogeneous character. For example, advertising, as a function, may not be fine enough in classification. It may require a further breakdown into direct mail, publication media, radio and television media, and others. Under a different set of conditions, the grouping for advertising may be artwork, copy writing, display materials, and others. As soon as the overall plan of a company's operations has been established, it is possible to determine intelligently the functions necessary to carry out the business policies. At that point, the distribution costs can be lined up with the functional activities of the individuals responsible for the company operations.

The objective may be only to accumulate an overall history of the total distribution costs or to determine by cost analysis what each funtion is costing. More likely, the goal is to make use of cost data for future control of distribution costs. The meaning of these three objectives may be understood more clearly from the following examples. The overall total costs are set up in the traditional form consisting of salaries, telephone, traveling expense, supplies, and others. The analysis of cost into functional categories will show a regrouping according to say expense of salesmen's calls —such as salaries, telephone, traveling expense, supplies—or expense of promotional literature—such as printing costs, postage, salaries and others— or expense of customer service—such as salaries, telephone, letter-writing and others. The control of costs is

based on the establishment of some measuring stick for each item of expense in each activity.

Control endeavors will follow very closely the cost function breakdown of the accounts. The setting of a target or measuring stick brings into consideration many items such as marketing methods, type of sales contacts with customers, channels of distribution and others. The use of predetermined cost estimates enables the comparison of the profitability of alternative plans of operations. In achieving this phase of cost control for distribution, an intimate knowledge of each sales function is gained, along with the cost level necessary to realize a particular sales potential. The control, however, involves a further step of charging an individual with the responsibility for achieving a specific sales goal, and at the same time, keep within the limits of the allowable cost.

As in production, it is necessary to separate the costs that can be controlled from those which cannot. The individual's responsibility is subject to measurement for the controllable costs but not for the fixed costs. The responsibility for the fixed costs was already established when the facilities were acquired. For example, the salaries of the personnel in the warehouse

SAMPELLE COMPANY- FUNCTIONAL DISTRIBUTION EXPENSE ANALYSIS

	Market research	Field selling expense	Advertising copy	Direct media costs	Promotion materials	Warehouse space costs	Warehouse handling costs
Salaries	$ 5,000	$12,000	$3,500	$4,000	$2,500	-	$10,000
Travel-rail		1,000					
Travel-plane		500					
Travel-auto		300					
Travel-hotel		900					
Travel-meals		1,200					
Travel-misc.		100					
Entertainment		500					
Conventions		800					
Supplies	300	200	1,200	800	1,800		200
Consulting fees	2,000		1,000				
Telephone	600	500	400	300	200		250
Dues & subsc.	100	150	50	100	50		
Payroll taxes &insurance	250	600	175	200	125		500
Light&heat	150		100	125	75	300	250
Depreciation	200		250	250	150	1,200	1,000
Property taxes						1,450	
Property insur.	40		50	50	30	450	200
Postage	100	50	150	150	200		75
Rent						3,600	
Commissions		10,000					
Truck expense							
Repairs&maintenance						300	400
Advertising media				7,500			
TOTAL	$8,740	$28,800	$6,875	$13,475	$5,130	$7,300	$12,875

EXHIBIT 1

are controllable items of expense, whereas the warehouse rental is a fixed expense. When this point of cost control has been reached, the analysis of the distribution costs will clearly indicate the nature of the sales effort. Functional analysis has been achieved because the relationship of "input" effort and cost to the "output" return in sales has been established. A judgment can be reached as to whether or not these particular sales are worth what it is costing to obtain them.

Functional Distribution Expense Analysis

In analyzing the distribution expenses along functional lines, a set-up similar to the Functional Distribution Expense Analysis (Exhibit 1) is a useful tool in preparing for cost control.

This analysis shows the total expense incurred for each function, broken down into the traditional account descriptions. It provides each department head with a more intimate picture of his operating costs in relation to activities than can be gained from the traditional financial report. A clear picture is gained of the areas in which the items of expense are incurred. It may be noted, by use of this analysis, that many items of expense are peculiar to only certain functions or areas. For instance, it may show that for many functions, the principal item of cost is the charge for salaries and wages. The remainder of the expenses are incurred for the benefit of a few functions.

As an aid in achieving control, the functional distribution expense analysis fixes responsibility for the expenses incurred. Various supervisors have been given assignments which are identified with a particular activity or function. The expense analysis must summarize the specific costs of each of these responsibilities. If, by comparison, an increase in expense is noted, the question is posed as to whether the increase is justifiable. Even if a subsequent explanation shows the increase to be properly defensible, the important point of control has been exercised. Responsibility was established, an investigation was made, and a report was issued.

Working at Work Measurement Standards

An important result from a breakdown such as is afforded in the functional distribution expense analysis will stem from the subsequent development and use of measurement standards. Generally, progress has been very slow in the use of distribution cost standards. There are many stumbling blocks to account for this slow development. Distribution costing has many intangibles and in addition the problem of identifying some unit of work among those intangibles. Examples of a unit of work may be: number of orders, number of billings, number of shipments, and others. Lack of uniformity in the types of work being performed

makes it difficult to set a reliable standard.

For this reason it has frequently been said, when discussing standards for distribution costing, that the conditions are so varying that the function does not lend itself to the application of standards for control. This stand against the feasibility of standards need not discourage our working on the problem. It may be difficult but, as the costs are analyzed and broken down into functional lines, it becomes evident that many items are identifiable and can be isolated for the setting of standards. The development of standards for distribution costs centers around the functions which we have been discussing. The standard will take the form of a standard time and cost for, as an example, each item handled, each item packed, each order handled and others. Therefore, we set about the task of building up detail studies of each item of expense in each activity to construct the information for the standards.

The control side of the standard cost program in distribution is exercised at the end of the accounting period when a report is issued showing the activity for the period, the actual cost, and the standard cost allowable. The variation from standard is computed and becomes the basis for an analysis as to the causes. The detail breakdown of the variation along the same lines as the job analysis for setting the measurement standard is passed on to the supervisor responsible for the cost incurred.

At the Point of "Do Something About It"

It becomes apparent that with every increase in the complexity of the business enterprise, there is a commensurate increase in the need and usefulness of a cost analysis along functional lines to operate as a tool of control. The biggest step is to learn where the costs are being incurred and what they consist of. This leads to an understanding of the problem and will give rise to the establishment of responsibility as a starting point in setting up controls. The analysis of the expenses should be prepared and should be followed up with the preparation of measurement standards to serve not only as a gauge of performance but also to give the required detail information for the improvement in performance. It is of no consequence to fix responsibility unless we follow it up with the information necessary for managerial action. Distribution cost control remains a formidable problem only as long as we do nothing about solving it.

Keeping Sales Promotions Worth Their Cost

by S. E. SCHAFER

Chief Accountant, Evansville (Indiana) Division, Whirlpool-Seeger Corporation

Distinguishing at the outset between promotional and advertising costs, this article, based on experience in the appliance field, describes the purposes of promotions and outlines methods for their design and control. The author draws frequent attention to cost aspects and the part to be played by the accounting function in planning and review of promotions.

IN THE ADMINISTRATION of modern business we have been able to pin down most types of income and expenses to standards of performance for effective operational planning and budget control, including those in sales and distribution as well as in the development and manufacturing fields. Many papers have been written on each phase of this complex series of income and expense problems, all designed to obtain more adequate understanding, measurement and control of the income and expenses involved. This paper will deal with the financial or controllership function as it applies to one type of sales and distribution expense which is quite different from most others. It is partly fixed, partly variable, difficult to measure, subject to abuse and exploitation by those we can least afford to offend, and the value received contains both tangibles and intangibles. This problem child of sales budgeting, forecasting and financial control is the specialty field of sales promotion.

What a Sales Promotion Is and Does

Sales promotion should not be confused with advertising. The latter is the necessary expenditure of funds to build potential customer recognition and acceptance of a product or service or a trade-name and to give potential customers the facts which will create a desire to have and use or enjoy this product or service. Sales promotion is more nearly a part of selling itself, and provides the means and incentives for the salesman to draw this informed potential customer from his television set or magazine to the point of demonstration and purchase.

Trade practice governs a certain minimum of sales promotion. In the appliance industry, it is customary for the manufacturer to provide, at a price, descriptive literature, product identification displays, dealer identification signs, etc. These are usually purchased in substantial quantities and sold to distributors at or below cost and the distributors pass them on to dealers with only a reasonable markup for

handling. Inasmuch as the high design and production cost is in the original purchase, this type of expense is usually fairly simple to determine and budget. Repeat orders should be at least self liquidating. Distributor and dealer acceptance and purchases of this type of sales promotion must be watched to make sure that they are being used and to anticipate any substantial obsolescence which might revise forecast calculations.

From this minimum of trade practice sales promotion, it is possible to go from a free set of glassware for new prospects to cap guns for box tops and automobiles for jingles turned in at the showroom. Beyond the minimum all sales promotions are entered into on a marginal and voluntary basis. Each is to be considered on a "do we" or "don't we" basis. Most product manufacturing expenditures are made to produce a given volume of quality merchandise at the lowest possible costs and, given the materials, methods and volume, the costs can be determined within reasonable limits. On the other hand, sales promotion costs are dependent largely upon intangibles and, as such, require informed and experienced consideration and judgment regarding results which may be expected and the responsibilities and degree of cost participation by the factory, distributors and dealers. Planning of sales promotions should be done as far in advance as possible so that the costs, which are very substantial in many industries, can be provided for in operating plans and budgets. Too often, a promotion will be rushed into to solve a problem which could have been foreseen. This type of promotion usually involves substantial outlays and often requires budget revision, with adverse affects on financial planning.

Promotions run from simple to complicated. The restaurant owner who gives each school age child a piece of candy when the father pays the bill has a relatively simple but effective sales promotion. His main problems are to estimate the number of children he should provide for and make sure that the more enterprising youngsters do not come up two or three times. An appliance manufacturer offering a special promotion to activate sales to dealers in advance of the retail selling season, with incentives all the way along the distribution route, has a much more complicated problem. Sales promotions in the appliance industry go all of the way through the chain of distribution from incentive pay plans for factory salesmen to come in and get a free windshield scraper, or five pounds of T-bone steaks for the potential customer. They may provide discounts and premiums to those buying and selling, financing aids and incentives, subsidizing of advertising, and countless other methods.

Each feature is designed to perform a special step toward the objective.

Each step must be more than worth the cost. Often field or small area tests are required in order to determine the effectiveness of a promotion. Control of sales promotion must start with the very beginning of the promotion plan and it is necessary that the controller take an active part from the beginning. To design satisfactory controls after the promotion plan has been formulated is difficult and often softens the effectiveness of the promotion. To design satisfactory controls after the promotion has been announced is impossible.

Purpose and Design of Sales Promotions

A good and effective sales promotion must be designed with its purpose always clearly in mind. If the purpose is to introduce a new product, the promotion should be designed to introduce and sell the new product, with the other products benefiting by association rather than subsidy. If the purpose of the promotion is to sell additional volume, it should be designed to do just this and not to incur an added cost to sell volume which would be obtained without the promotion. To design and introduce a promotion without a specific purpose is a waste of time and money. A few of the many purposes which sales promotions serve are:

1. To increase sales.
2. To sustain sales.
3. To introduce new products.
4. To change product emphasis.
5. To meet competition.
6. To gain recognition.

After the purpose to be served has been clearly defined and agreed upon, the promotion must be designed. All phases of the promotion must be studied and incentives and rewards placed where they are needed. Responsibilities must be thought out and planned for at the same time as the rewards. Quotas must be designed which will reward only over-standard performance. Administration of the promotion must be provided for and methods of policing the plan must be built into it. Last, but not least, a means must be devised for measurement of accomplishment of the purpose for which the plan is being devised. The restaurant owner has just himself, the conniving children and his bank book to be concerned with, but the manufacturer has a complex organization of sales personnel, distributors, dealers and customers to contend with, and few of these are above taking advantage of any opportunity or loophole to their benefit.

The design of the basic promotion is the responsibility of the marketing people. They are usually better fitted by experience, training and nature to determine what incentives and attractions will best catch the desires of the buyer and the energy of the sales force through the chain of distribution. The controller's responsibility in connection with the design of the promo-

tion is largely limited to answering the following questions:

1. Is the estimated cost computed on a reasonable basis?
2. Is the total estimated cost reasonable in light of the purpose of the promotion?
3. Is the estimated cost reasonably broken down between fixed and variable costs so that proper provision can be made in the budget and in the accounts for the cost of the promotion?
4. Are quotas, if any, established so that rewards apply to performance beyond what could be expected without special promotion?
5. For proper administration is the promotion:
   a. Simple and clear to understand?
   b. Definite as to beginning and ending dates?
   c. Definite as to reports and reporting dates?
   d. Definite as to responsibility of each party?
   e. Definite as to amounts, method and time of payments or prizes?
6. Are rules designed so as to prevent abuse or twisting by those who might abuse or twist the plan to their advantage?
7. Is the plan fair and equitable to all customers and not discriminatory in favor of any group or class of customers? Should legal counsel review the plan for possible violation of Federal or State trade or lottery laws?

In estimating the cost of the promotion, the fixed costs of literature, prizes, etc., are relatively easy to determine. The variable costs are more difficult as anticipated performance beyond quota must be estimated at all phases and at all levels. It is very possible to have under-quota performance on the average but to have expensive over-quota performance in some phases. Prior performance records and an intimate knowledge of the capabilities of the participants will usually permit a fairly close estimate. The estimated cost of the promotion should be broken down to a unit sales cost or a percentage of the overall sales dollars for the period in which factory sales benefit.

The reasonableness of the cost of the promotion to accomplish its purpose must be scrutinized very carefully, as it is very possible to give away more than the benefits. The cost per unit sold may appear to be very small but, in total, might easily exceed the marginal profit on the units sold in excess of those which could have been sold without the promotion. If such were to be the case, the promotion might well appear to be a success but have quite the opposite effect on profits.

The establishment of quotas is a very important part of any production where they are used. They must be high enough to assure that the normal effort is expended before the rewards begin, yet they must be low enough so that they appear easily attainable in order to generate the effort and enthusiasm required to make the plan a success. No one is ever satisfied with a quota, so they must be fair and equitable and based on historical or independent information which can easily be defended.

Any sales promotion must be prepared and announced in a form and language so simple and so clear that it can be easily understood and not misunderstood. For instance, the words "distributor shipments" could be construed to include consignments or

other unsold merchandise, while "dealer purchases" clearly eliminates any unsold items. In the announcement or in the rules set up for the promotion, provision should be made for reporting of progress, so that review can be made of the variable costs and progress bulletins can be circulated to maintain spirit and enthusiasm. Provision should be made for the submission of documents such as invoices, receipts, coupons, etc., supporting claims. It may be advisable to require approval of any quotas established in the field to prevent such things as assignment of a 4,500 point quota among five salesmen on a 10-10-10-10-4, 460 point basis (the 4,460 point man having resigned last week.) Very clear deadlines must be set for termination of the promotion and the submission of claims, and these deadlines must be impartially and strictly enforced.

In order to give proper consideration and approval, it is necessary to see the whole plan in detail and summary form. To attempt to consider it piecemeal usually leads to misunderstandings, often of objectives and usually of costs. As with budgets, appropriations and other matters requiring management approvals at various levels, it is best to have a standard summary form for approval of sales promotions. This form should state the objectives, methods, responsibilities, estimated costs and carry the required approvals. Other forms of reports, coupons, certificates, claims, etc., will differ with each promotion and should be designed to have the most simple handling. Field reports will be prepared, often under quite primitive conditions, but when they reach headquarters they will require volume handling. With a little thought and extra copies the headquarters record work can be limited to filing and summarizing the field reports, broadcasting standings, etc.

Policing the Promotion; Taking Up the Expense; Measuring Results

A procedure must be established for the checking and approval of claims. The same care should be exercised as in checking vouchers payable to see that the claims are properly supported and clerically accurate. They should be reviewed and approved by sales personnel familiar with field performance and any unusual or substantial claims should be scrutinized for possible abuse or even fraud. Although the majority of distributors are scrupulously honest and conscientious, there are always a few who will try to twist the terms of a promotion to their advantage or who may even enter into collusive arrangements with dealers for their mutual benefit. If anything of this nature is suspected, immediate action should be taken. Usually action of this type is best taken by a field visit by a member of the controller's staff. If action is delayed until after the promotion is over, it is hard or

impossible to prove just what did take place and to take back any credit or rewards improperly given.

Often the actual costs of sales promotions are paid out over a long period of time. Literature and introduction costs usually come before the promotion starts. Inasmuch as performance usually takes place well after factory shipments under the promotion have been completed, it is necessary that the estimated costs be accrued in the expenses as the factory shipments are made and that they be reviewed and adjusted as the promotion progresses. If the promotion results exceed expectations, it should be remembered that the excess sales probably carry a much higher promotion cost than the base sales.

The success or failure of a sales promotion is both an interesting and a difficult thing to measure. Measurement, however, is an essential part of any promotion. It provides an excellent opportunity to evaluate the effort and application of the sales personnel, the distributors and dealers. Perform-

SALES PROMOTION AUTHORIZATION

Purpose of Promotion: Increase sales of electric fry-pans to obtain larger portion of National Market and increased customer acceptance.

Operation of Promotion and Responsibilities : Cash awards to retail salesmen of $5.00 per electric fry-pan sold over five units. Award to be paid by Dealer and passed back to Distributor and Factory at same rate of participation as Co-Op Advertising (50-10-40). In each Sales Region subsidize prizes to Distributor salesman selling accounts with largest individual awards to retail salesman. Prizes for each region - First $1,000, Second $500, Third $100.

Effective Dates --- Beginning - May 1, 1957 Ending - June 30, 1957

Volume Estimates (In sales units)

With Promotion -	48,000
Without -	30,000
Additional -	18,000

ATTACH PROPOSED ANNOUNCEMENT BULLETINS, RULES, ETC.

Authorization	Date		Estimated Cost		
			Total Cost	Per Unit Add'l. Vol.	Unit Marg. Profit
Prepared by.....	2-10-56				
Approved xxx Sales Prom. Manager	2-12-56	Factory Fixed	$ 8,000	$. 44	
		Variable	32,000	1.78	
Approved xxx Controller	2-15-56	Together	$40,000	$2.22	$ 4.78
		Distributor -	8,000	.44	1.95
		Dealer -	40,000	2.23	6.95
Approved xxx Sales Manager	2-15-56	Combined	$88,000	$4.89	$13.68
Approved xxx General Manager	2-16-56				

EXHIBIT 1

COMPUTATION OF COST: ELECTRIC FRY-PAN PROMOTION

Fixed Costs		Variable Costs		
Literature - Bulletins only	-	Volume with promotion	48,000	
Forms, etc - Standard forms	-	Volume without promotion	30,000	
Prizes -		Anticipated added volume	18,000	
15 distributor salesmen				
5 @ $1,000, 5@ $500, 5@ $100	$8,000	Estimated quantity which will be sold under quota (5 or less)	32,000	
		Balance - sold over quota	16,000	
		Premium @ $5.00 each	$80,000	

NOTE: Accrue variable costs in accounts @ 67¢ a unit April, May and June if required. Accrue fixed costs $4,000 April and May.

Cost to:			
Dealers:	50%	$40,000	
Distributors:	10%	8,000	
Factory:	40%	32,000	32,000
Total cost to Factory -			$40,000

EXHIBIT 2

ance under the promotion and its cost should be compared with quotas and also with normal sales records for each sales representative and for each distributor. This comparison will point out strength and weaknesses in the sales and distribution organization and provide necessary information for future sales and promotion planning.

Operating A Promotion

As an illustration of several of the points touched upon in this paper a simple but effective sales promotion to accelerate sales of one product in a line of kitchen appliances is shown in the attached exhibits. The Authorization Form (Exhibit 1) contains a summary of the details and cost of the promotion. The additional volume, unit cost and unit margin should not be used on routine, trade practice promotions, as the resulting figures are often misleading. These figures are to be used only for special purpose promotions. It will be noted that the controller's approval is shown before that of the sales manager. This is to insure a critical review of costs and assumptions at an early stage in the approval chain. Computation of costs is set forth in Exhibit 2.

Sales promotion is a necessary function for any business manufacturing or selling consumer products or services. With careful and proper promotion design, administration and control, it is possible to obtain maximum results at a minimum cost. If this is done successfully, we have attained understanding, measurement and control of sales promotion costs.

Control Accounting for Returned Goods

by ROBERT E. CHRIST

Chief Cost Accountant, Bolta Products Division, General Tire & Rubber Co.

Merchandise sent back by customers does not just drift in and lie around in the company with which the author of this article is connected but is watched for through a pre-return authorization device and is taken in only under prescribed conditions. The procedure is described in some detail and illustrated by the form used.

OUR COMPANY is engaged in the manufacture of plastic products of various types, including injection-molded and compression-molded items, along with yard goods for the automotive and furniture industries. We also have consigned goods inventories at several locations throughout the country.

Survey and Recommendations

The problem of goods returned from customers for defects, discontinued patterns, etc., has always been a problem from a control standpoint and, after a study of our present method of handling returns, the following facts were established:

1. Between 30% and 55% of items returned were accepted without written authorization. The 25% spread was due to the number of returns received the same date the authorization was initiated.
2. In the majority of cases, the receiving clerk had no way of knowing, short of opening all cartons, what had been received, whether all the material had been authorized on one authorization form, or which authorization applied, if there was more than one for the customer involved.
3. There was no area suitable for storing returns while waiting for authorizations. This resulted in the material being sent to the inspection department with no identifying document. There were cases in which several weeks elapsed between receipt of the material and issuance of a return authorization.
4. A ten-part return authorization form had been used with disposition as follows:

1. Credit dept.	Advance notice
2. Sales manager	
3. Quality control	
4. Credit	Indicating receipt of goods
5. Receiving dept.	
6. Production control	
7. Credit dept.	Inspection disposition of goods
8. Inspecting dept.	
9. Quality control	
10. Production control	

After examining the results of our survey, recommendations were made. One was that there should be a specific statement of policy prohibiting acceptance of returns without a written authorization. It was also recommended that the responsibility for expediting returns and resulting credits should be in the hands of the product manager and not the credit department and that the customer should be requested to:

1. Mark all cartons with the return authorization number.
2. Enclose a packing slip with all material.
3. Send an invoice with the description of material returned and the amount for which credit is being requested, including freight charges when involved.

In addition, it was specified that the return authorization should accompany the material to the inspection department. To avoid delay in this process the plan included having product sales managers designate an alternate to initiate return authorizations in their absence. Further recommendation was made that the design and construction of the return authorization form be revised to:

1. Provide a more usable form.
2. Reduce the number of copies.
3. Eliminate duplicate files.
4. Provide only copies actually needed and used.

Odyssey of a Returned Goods Authorization

In order to implement the recommendations, the following procedure was developed which we believe answers our problems. The procedure is spelled out below by the sections involved in the processing of returned merchandise. A seven-part carbonized form is used (Exhibit 1). The original form has three sections, one for use as an advance notice with the material that we expect from the customer. To this is added the receiving information when the goods are received. In-

RETURN AUTHORIZATION
Bolta Producta
A division of the General Tire & Rubber Co.

Customer	Order No.	Invoice No.	Sales Div.	Date

Authorized By

Reported Condition

RECEIVING RECORD

Delivered By — Date

No. Ctns.	Weight	Freight ☐ pre-paid ☐ col-lect	Amount $

Disposition — Date

Material	Quant. Ordered	Inspection: Quantity	Width	Condition	Disposition: Inv.	For. to Mfr.	Scrap	Ret. to Mfr.

Inspected By — Date	Insp. Dept. Approval — Date	Credit Approval - Product Manager:

EXHIBIT 1

spection and disposition information constitute the final portion. The summary below shows generally the information which would be on each copy.

	Expected material	Receiving information	Inspection-disposition
1. Credit	X	X	X
2. Customer	X		
3. Product sales manager	X		
4. Quality control	X		
5. Receiving copy	X	X	
6. Cost department	X	X	X
7. Inspection copy	X	X	X

The following paragraphs explain the flow of these copies through the various company sections and the final action taken.

The product sales manager or designated alternate authorizes the customer to return the merchandise in question and, at the same time, the customer is given the return authorization number, either by phone or letter. The form is then filled out by the product manager with the pertinent information and the customer's copy is mailed to him. An advance copy is sent to the quality control section, so that any information it may have on the goods in question can be relayed to the sales department befor any action has been taken. The product manager files his copy of the authorization by a follow-up date. The remaining copies are sent to the receiving clerk to await the receipt of the goods being returned.

Upon receipt of the copies of the authorization form by the receiving clerk, they are filed alphabetically by customer pending receipt of material. When the material is received, the form is removed from the file and the necessary information is posted to the return authorization in the receiving record section, such as weight, number of cartons, freight charges, etc. The receiving notice copy is pulled from the set and is sent to the product manager. The remaining copies are sent with the material to the inspecting department.

The material is inspected and classified in the inspecting department and the remaining copies of the form are filled out with the quantity, width and condition, and the disposition of the merchandise. The disposition of the material is approved by the foreman of the inspecting department and, if disposition is in doubt, the foreman calls the product manager for further clarification. The credit copy of the return authorization is sent to the sales manager for approval of credit issuance and is then returned to the credit department. The inspection report copy is sent to the quality control section so that any further steps taken will be determined in this area and the cost department form is sent to the cost department for any accounting processing needed. The goods, after inspection, are sent to different locations in the plant, depending on the disposition column of the form.

The quality control section reviews the advance copy of the form to determine if the material listed to be returned should, for technical reasons, be held up pending approval of a sample sent by a customer. Quite frequently, because of information that quality control has in its possession, it advises sales that, because of the physical properties or other reasons, it would not be practical to have the material sent back and, in these cases, a spot check at the customer's location might be sufficient, so that non-salvagable material would not be sent into the plant. On receipt of the inspecting department copy of the return authorization form, the quality control staff determines from the information whether anything further has to be done to expedite the efficient processing of the material.

The credit department receives the copy of the authorization after approval or disapproval has been signified on the form by the sales manager, and a credit memorandum is issued if required. The memo invoice sent in by the customer is used by the credit department to determine the value to be placed on the credit. These figures are checked against the invoice on which the goods were originally shipped.

The follow-up date previously referred to should be set to allow sufficient time for the material to be received. (Ten days to two weeks should suffice.) On the follow-up date, the product manager should take any action he feels is necessary to determine the whereabouts of the material. If material is not received as of this date, the copy should be refiled by a new follow-up date. When the receiving report is received, the follow-up copy is pulled from the file and destroyed. The report is then filed by follow-up date so that sufficient lead time is allowed for inspection and return of credit copy of the return authorization. On the last follow-up date the product manager should expedite the inspection of material or the issuance of credit memorandum. When the credit copy of the return authorization is received from the inspecting department, the receiving report is pulled from the file with the accumulated correspondence. The credit copy is signed by the product manager and he indicates on the form whether credit is to be issued or not. All correspondence is attached to the credit copy and it is sent to the credit department for final disposition.

Control Achieved

At this point the final phase of the cycle is entered into. Upon receipt of the cost copy of the authorization, the disposition section is carefully checked so that all factors are taken into consideration before any accounting entries are made. In cases in which credit has been refused, the credit copy is sent immediately to the cost depart-

ment so that the records may be maintained properly. With the institution of this system we feel that the following advantages have been gained:

1. By having proper control through each operation, customer relations have been improved by eliminating delinquent credits.
2. We are able to schedule the flow of work through our plant on a reasonably accurate basis and to eliminate material problems arising from absence of information.
3. We are able to check any discrepancies between what the customer claims he sent and what we received, in time to correct the situation.
4. We are able to control the receiving area by scheduling shipment of returned merchandise to coincide with current conditions, such as peak periods in our plant.
5. We are creating awareness of the amount of money and time involved in handling sales returns.

Letters to the Editor

YOU CANNOT PRICE THE COSTS

Editor, N.A.A. Bulletin:

Quite often the cost accountant is called upon to establish prices for new or improved products. Management reasons that the most important factor in price determination is the recognition of costs. It follows, then, that the cost accountant is best qualified to administer the price-making policies. I believe that the price-making function is misplaced if the cost accountant is left alone at the helm. This article is an attempt to defend that position and to generate your opinion on the considerations which influence prices.

IT IS A COMMON misconception that costs control prices. It is also commonly believed that cost information is the starting point of all price-making. If we know costs, simply add a desired profit to obtain a selling price. But it's not that easy! As an example, a man buys sheet aluminum and fabricates trays with the use of small hand tools. His labor alone may consume three or four hours (cutting, hammering and packaging). The cost could easily be fifteen dollars. But can he find a buyer at that price? Probably not, this same item might be machine produced for much less.

The problem in any price-making decision may be stated as follows: at a given selling price, how much volume can we expect and what will be the cost? Since price factors (and costs, also) vary according to type of products, it is impossible to generalize the relationship of costs, volume and price. Let us take a look at each major type of product and the significance of each factor in the determination of prices.

Primary raw materials are the basic commodity groups (petroleum, livestock, timber and grain). Although it may not be generally recognized, price-making in this group is controlled by the buyer. Gasoline furnishes a good example. Demand is controlled by the consumer's income. The seller begins with a known selling price and subtracts his cost to determine his operating cost limitations. In this industry, the selling price and volume factors are known before the costs are computed.

Now let us look at a commodity group which is in direct contrast. This is the group which includes service or construction contracts which will not be repeated. The volume is one, the selling price is unknown, so cost becomes the sole controlling factor. Normally this is the only type of product (or service) where one factor is the dominating influence. However, it makes up a small part of our economy. Unfortunately, the cost-price concept which applies to this group leads many to the conclusion that the same principle applies to all other product groups.

Especially there is an assumption that cost dominates in determining prices for manufactured goods. Of course, on the initial venture, a manufacturer will want to know costs and their relation to selling price before he decides whether or not to risk his capital. However, once the organization is established and the product is accepted, the venture is subject to all hazards of doing business—competition, public preference, economic changes, etc. If the product stands alone in its field and if it has consumer acceptance, there is a good chance that the price can be established to cover costs. It does not follow, however, that this condition will prevail. Someone may find a cheaper method of producing a comparable product. Or unfavorable mate-

rial, labor or taxes may push the costs beyond the limit of an increased selling price. This again emphasizes that costs may affect prices but seldom control them.

The cost accountant should be in a position to warn management when the profit picture is unfavorable. This does not mean that management could increase prices if they were aware of their losses. It does give them the opportunity to put the pressure on volume and/or cost factors. They may discard product lines, request suppliers to lower quotations for raw materials, lower quality of the product, ask workers to accept lower wages, or if needed liquidate the entire business venture to stop further losses.

The cost accountant's position in price-determination should be limited to the calculation and presentation of provable and, whenever necessary, abstract costs. The price-maker quite often needs both types as a point of reference—depending upon the product group. But beyond the presentation of cost and related profit information, the cost accountant should leave the pricing to other members of management who are more familiar with volume predictions, competitors' prices and the many other blue-sky areas of conscientious price-making.

ROY R. CASE, JR.

WHAT THE ACCOUNTANT SHOULD KNOW ABOUT INSURANCE

Editor, N.A.A. Bulletin:

THE PROBLEM OF PLACING the responsibility for handling the insurance function is one which has too long received too little attention in corporate organizations as a whole. It seems readily apparent that, in the absence of sound reasons to the contrary, the accounting function, which deals with systematic recording of values of property and other assets, and the insurance function, which deals with the preservation of such values, should be closely related. Where a competent specialized insurance department exists, it becomes less important for others in the organization to have a knowledge of insurance. However, where it does not exist, the responsibility for insurance knowledge on the part of others, and especially those responsible for the accounting function, become greater.

In the first instance, it may appear offhand that, since the insurance function is adequately taken care of, the accountant need not have a knowledge of insurance, but this is not the case. In order to perform his accounting duties under such circumstances, he must be familiar with at least two important features of the various insurance contracts, namely, the basis of the premium calculated and the essential record requirements of loss adjustment. In addition, the accountant should also be acquainted with similar features pertaining to any major insurance exposures which are self-insured by the company. In this category, the premium computation procedure of similar purchased insurance will normally be used in determining allocation of funds to the self-insurance reserve, and any value of losses withdrawn will be determined on the same basis as if settled under purchased insurance. Accordingly, internal auditing in such instances will require the same records and checking as though the exposure were covered by purchased protection.

Where there is no centralized or specialized administration of the insurance function, the insurance duties of all persons charged with any duty toward preservation of the corporate assets is correspondingly enlarged. In such instances it is readily apparent that the accountant, not having a pre-check on premium invoices, will have a correspondingly greater responsibility for acquiring detailed knowledge of the mechanics of premium computation. This will be necessary not only to check the accuracy of the computations but also to detect in-

surance company errors and evaluate the explanation of any questionable items used in preparing the invoices. Likewise, since the concern cannot rely on specialized employees to handle loss adjustments or take advantage of insurance policy changes, detailed records may be necessary and the accountant must rely upon his own ability to keep abreast of changes which occur in policy requirements in order to be certain that adequate, unquestionable and proper records are kept both for loss adjustment and premium determination purposes.

In general it may be stated, in answer to the question of what the accountant should know about insurance, that:

1. Under any system of operation, the accountant should have at least a fundamental knowledge of premium determination and loss adjustment procedure in order to properly discharge his duties, furnish necessary records and check adjustments to his accounts.
2. The less centralization and specialization of the insurance administration function in the organization, the more knowledge of insurance details are required of the accountant and the greater becomes his need for keeping abreast with changes in policy terms and conditions, especially as they affect premium determination and loss adjustment procedures. In this situation also, the responsibility of the accountant to evaluate changes in records in terms of their ultimate effect on insurance protection or self-insured exposure is greatly increased.
3. As in any other business pursuit, the more knowledge any individual posses es of the functions of other departments the greater is his value and the better he can understand and accomplish his own functions in the organization.

Therefore, as a categorical answer to the question of what the accountant should know about insurance matters, it may be answered, "All he can learn." As to what he must know, the above mentioned essentials to a proper fulfillment of his accounting function seem adequate.

C. W. PEARSON

Notes on Current Reading

Books

Cost Accounting

Charles F. and William J. Schlatter, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 1957, Second Edition. 725 pp.

In prefatory comment to this second edition of a textbook first issued in 1927 under authorship of the elder Professor Schlatter, the present joint authors say that it "represents our attempt to present a survey of the field of industrial cost accounting and analysis for managerial purposes." There is earlier treatment of standard costs, material on direct costing, and greater attention to distribution cost accounting as well as elaborated treatment of control of burden costs.

Cost Accounting

John J. W. Neuner, Richard D. Irwin, Jr., Homewood, Illinois. Fifth Edition, 1957. 944 pp. $7.80.

It is five years since the previous edition of this text, first published in 1938. The present edition exemplifies stress on managerial accounting by devoting one-third of the space available to chapters sectionalized under the caption, "Managerial Control Through Use of Cost Accounting Data and Procedures." Budgeting control, standard costs, reports for management, profit planning, and distribution cost analysis are all treated in this series of chapters.

Standard Costs

Clinton W. Bennett, Prentice Hall, Inc., 70 Fifth Ave., New York 11, New York, 1957, 515 pp. $10.65.

Subtitled "How They Serve Management" this book (the author of which is a Past National President of N. A. A.) is devoted to the establishment of standard costs, the structure of cost systems which utilize them, and their uses for control, incentives and planning. It is not primarily a textbook but is, rather, addressed to managers, engineers, and accountants active in the effective conduct of business operations.

Principles of Accounting—Introductory

H. A. Finney and Herbert E. Miller, Prentice-Hall, Inc., 70 Fifth Ave., New York, N. Y., 1957. Fifth Edition. 757 pp. $9.25.

A number of changes, intended to be both minor in extent and pedagogically significant in character have been made in the present edition of this elementary accounting textbook first issued in 1932. Among the changes are slightly more gradual initial coverage of the accounting cycle and relegation of specialized topics to closing chapters. General revision of text and problems has been made in the light of suggestions resulting from use of previous editions.

Accounting as a Social Force in the Community

Mary E. Murphy, Cambridge University Press, 1957. 32 E. 57th St., New York 22, N. Y. 208 pp. $4.75.

Collected here are seven lectures delivered in Australia by Professor Murphy during her Fulbright lectureship there. Among the topics of addresses included are "Dilemmas and Challenges in Modern Accounting". "The Correlation of Accounting and Economics", "A Comparison of Income Taxation in Australia, Great Britain, and the United States, and "The Rise of the Controller in Business Management". The last-named contains both historical and descriptive material, as do most of the lectures.

Effects of Price Level Changes on Business Income, Capital, and Taxes

Ralph Coughenour Jones, American Accounting Association, College of Commerce and Administration, The Ohio State University, Columbus 10, Ohio, 1956, 199 pp., $4.00 cloth binding $3.25 paper bound.

Accountants have been maintaining an uneasy "truce" with the problem of reflecting in statements and accounts the reduction in purchasing power of the dollar. Here is a considerable study of the matter by one long interested in it. It depicts the impact of inflation on "monetary" and non-monetary accounts and considers "managerial and tax uses of figures adjusted for price level changes".

Tested Scientific Inventory Control

W. Evert Welch, Management Publishing Corp., 22 W. Putnam Ave., Greenwich, Conn., 1956, 158 pp., $12.50.

It is stated prefatorily that "this book is intended to be a practical management and operating guide to more scientific determination of the only two decisions that create inventory: 'how much' and 'when'. The approach is definitely mathematical by application of formulas which, to most accountants, will appear "advanced". Order quantities and safety stock are resulting data.

Internal Audit and Control of Payroll and Accounts Payable (where accounting machines are utilized)

Institute of Internal Auditors, 120 Wall St., N. Y., 1957, 53 pp., $1.00.

Designated as Research Report No. 4, this study deals with the effect on auditing steps, for two important areas, of the existence of accounting machines (not specifically electronic) in a company, particularly as organized in a "machine department" considered (in a closing section) as itself subject to audit. The relationship of machines to control is dwelt on in general terms at the start.

Management Planning and Control

Controllership Foundation, 2 Park Ave., New York 16, N. Y. Paper Bound, 1957, 113 pp. $3.00.

Subtitled "The H. J. Heinz Approach", this study deals with that company and was first prepared by its executives and edited into present form by the publishers staff. It is detailed in character, accompanied by many charts, and is followed by an appendix (among others) which cites topics discussed at four types of staff meetings.

Bookkeeping Procedures and Business Practices for Small Hospitals

American Hospital Association, 18 East Division Street, Chicago 10, Ill., 1956, paper bound 170 pp., $4.00.

Bearing the considerable subtitle, "Handbook on accounting, statistics, and business office procedure for small hospitals", this manual includes eighty-two forms. The text they illustrate runs from "bookkeeping principles and records" through "financial reports" and (as to business practices) from "credits and collections" to "statistics". One appendix constitutes a "check list of supplies, expenses, and equipment".

Shortened C P A Problems

Hilary H. Sax, Prentice-Hall, Inc., 70 Fifth Ave., New York, N. Y., 1957, 303 pp. $5.35.

An offering for the candidate for the uniform certified public accountant examination set semiannually by the American Institute of Accountants and used by the states generally, this problem-solving aid utilizes problems shortened from those given to reduce "much arithmetical computation—and to focus on the principles involved". Problems are grouped and methods of attack, as well as relevant accounting text references, are given.

Municipal Costs and Revenues Resulting from Community Growth

Walter Isard and Robert Coughlin, Chandler-Davis Publishing Company, Wellesley, Mass., 1957. 111 pp.

Based upon research "conducted at the Sec-

tion of Urban and Regional Studies of the Massachusetts Institute of Technology." This study is in two parts, one related to "residential communities" and the other to "industrial-residential communities." Many tables, charts, and appendixes are provided which trace the course of various types of community costs, e.g. roads, schools, fire protection, with growth.

Office Equipment: Buy or Rent

Robert H. Anthony and Samuel Schwartz, Management Analysis Center, Inc., 275 Newbury Street, Boston 16, Mass., 1957, 92 pp. $15.00.

Many chapters of this study, if not all, will be useful to accountants in helping decide the best basis on which to acquire or maintain an accounting equipment installation. One chapter tackles the knotty problem of "Future Useful Life of the Equipment." The make-or-buy alternative is given careful statement and treatment.

Introduction to Operations Research

C. West Churchman, Russell L. Ackoff, E. Leonard Arnoff, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, 1957, 645 pp., $12.00.

Introducing "basic coverage of principles and methods illustrated by case examples from business and industry", this work considers its subject under headings of models relating to inventory, allocation, "waiting time", replacements, and competitive conditions. There are also initial sections explaining operations research and the techniques it employs. The book closes with a treatment of administration of the function.

Principles of Business Law

Essel R. Dillavou and Charles G. Howard, Prentice-Hall, Inc., Englewood Cliffs, N. J., Sixth Edition 1957, 1062 pp., $7.50.

First published thirty years ago, this text consists, as in previous editions, of flexibly combined text-and-case presentations. The topical subdivisions are familiar, i.e., contracts, agency, negotiable instruments, business organizations, personal property and real property. There are sections, also, on security for credit transactions and trade regulations, including labor law.

Retailers' Excise Tax Guide

Controllers' Congress, National Retail Dry Goods Association, 100 West 31st St., New York 1, N. Y., 1957, variously paged, $4.25 members, $7.50 nonmembers.

Arrangement of this manual is by type of tax, i.e., jewelry, fur, toilet preparations and luggage, as well as by functional aspects of the taxing process, as liability, determination of amount, returns and payment, and adjustment. It is based on Sections 4001 to 4031 in chapter 31 of the Internal Revenue Code of 1954 and applicable sections of Regulations 51.

SELECTED ARTICLES FROM ACCOUNTING PERIODICALS

ACCOUNTING RESEARCH, *May*, 1957 (Cambridge University Press, 32 East 57th St. New York, N. Y.)

The Financial Organisation of a Company in the Seventeenth Century. J. K. Horsefield.

Accounting Conventions, Pricing Policies and the Trade Cycle. J. McB. Grant and R. L. Mathews.

THE ARTHUR YOUNG JOURNAL, *May*, 1957 (Arthur Young & Company, 165 Broadway, New York.)

Deductions for Travel and Entertainment Expenses, John T. Hayes.

Comments on a New Cash Receipts Technique, Peter H. Burgher.

(Continued on page 1446)

SELECTED ARTICLES FROM ACCOUNTING PERIODICALS

(Continued from page 1445)

THE CONTROLLER, *May*, 1957 (2 Park Ave., New York 16)

Statistical Techniques for Financial Planning and Forecasting, Dr. Andrew Vazsonyi.

Responsibility Auditing: A supradimension of Management Control. William L. Campfield.

COST AND MANAGEMENT, *May*, 1957 (31 Walnut St., So. Hamilton, Ontario, Canada)

Why Not Operate A Capital Budget? Robert J. Mulle.

Communication Problems in and Expanding Business. Carl A. Gerstacker.

An Approach to Profit Control Through Analysis and Reporting for Top Management. Robert C. Harrington.

Welfare Plans—Asset or Expense? William D. Welsford.

Cost Control is People. Robert I. Dickey.

THE FEDERAL ACCOUNTANT, *April*, 1957 (P. O. Box 53, Washington 4, D. C.)

Trends in Accounting and Auditing Education. Paul M. Green.

Recent Developments in Auditing Techniques. Donald J. Bevis.

Auditing and Its Development in United States Steel. William R. Davies.

THE INTERNAL AUDITOR, *June*, 1957 (120 Wall St., New York 5, N. Y.)

The Internal Auditor Joins the Management Team. Victor Z. Brink.

Application of Data-Processing Equipment in the Office. E. C. R. Williams and D. J. Bailey.

Auditing of Construction Costs. William L. Dowd.

Control by Integrated Data Processing. W. T. Hamilton.

Some Effects of Data Processing on Accounting. B. C. Lemke.

JOURNAL OF ACCOUNTANCY, *May* 1957 (270 Madison Ave., New York 16, N. Y.)

Church Accounting. Lowell E. Larson.

A Broader View of Internal Control. Paul Grady.

Pitfalls in Contract Preparation. Peter Arnstein.

Accounting and Economic Concepts, Norton M. Bedford.

Income Accounting and Social Revolution, George O. May.

JOURNAL OF MACHINE ACCOUNTING, *May*, 1957 (6109 N. Karlov, Chicago 30, Illinois.)

ALCOA'S Order Handling System. R. T. Anderson, Jr.

Responsibility of Management, as Related to Computers. Robert E. Slater.

DIGEST OF TAX ARTICLES, *May* 1955 (76 Maiden Lane, Albany, New York.)

The Tax Treatment of the Lease With An Option to Purchase. Blumenthal and Harrison.

THE NEW YORK CERTIFIED PUBLIC ACCOUNTANT, *May* 1957 (677 Fifth Ave., New York 22, N. Y.)

Accounting Controls for Box Office Receipts. Robert M. Carr.

Examining the Financial Statements of a Television Broadcasting Station. John H. Regazzi.

Cost Accounting Under the Robinson-Patman Act. Otto F. Taylor.

Accounting System for a Small Water Plant. Stanley L. Cohen.

RETAIL CONTROL, *June* 1957 (100 West 31st St., New York 1, N. Y.)

Department Store Organization. DeFord C. Mills.

Merchandise Management Accounting (Questions and Answers.)

Internal Auditing and Internal Control. Kenneth P. Mages.

SELECTED ARTICLES FROM BUSINESS PERIODICALS

AMERICAN BUSINESS, *May* 1957 (4660 Ravenwood Avenue, Chocago 40 Illinois.)

Westinghouse's Office Methods Improvement Program. E. H. Shanks.
How Monsanto Forecasts the Sales Trend. Robert L. Crandell.
Executive Compensation at Helene Curtis. Fred P. Lauth.
Profit Sharing for a Small Business. Ruel McDaniel.
A New Concept in Pension Planning. John DePaul Hansen.

BUSINESS BUDGETING (Technical Notes Magazine) (National Society for Business Budgeting, P. O. Box 1, Covington, Kentucky.) *May* 1957.

The Control of Decentralized Operations. A. R. Fay.
Planning a Budget Program for Dynamic and Successful Management, G. R. Guthrie, Jr.
Correlation of the Breakeven Calculation with the Budget. Harold H. Gearhart.
A Practical Budgeting Program, in a Refractory Products Company. Ralph Luckaman.
Continuous Manufacturing Expense Budget Review as a Requisite of Sound Budgeting Technique. Russel F. Rose.
Accounting and Budgeting For the Automated Plant. DeWitt C. Cox.

THE COMMERCE JOURNAL, *May* 1957 (University of Toronto Commerce Club, 273 Bloor St., West, Toronto 5, Ontario.

Introduction to Managerial Accounting. G. Moller.

DUN'S REVIEW AND MODERN INDUSTRY, *June* 1957 (99 Church Street, N. Y., N. Y.)

Dynamic Budgeting: Getting the Most from Your Program. James D. Willson.
Transportation Costs Can Be Cut. James D. Willson.

HARVARD BUSINESS REVIEW, *May* 1957 (Soldiers Field Station, Boston 63, Massachusetts.)

How to Organize for New Products. Samuel C. Johnson and Conrad Jones.
The Job of Job Evaluation, Douglas S. Sherwin.
Planning-Key to Research Success. Robert Stolz.
An Uneasy Look at Performance Appraisal. Douglas McGregor.
Better Reports for Better Control. John G. McLean.
Pricing for Profit: A Revolutionary Approach to Retail Accounting. Malcolm P. McNair and Eleanor G. May.

OFFICE EXECUTIVE, *May* 1957 (132 West Chelton Avenue, Philadelphia 44, Pennsylvania.)

The Budget: Its Preparation and Use. Sidney M. Arnold.
Executive Time Saver. Fred Rust, Jr.
Disaster Proof Your Records. Robert A. Shiff.

For Your Information

NEW ATTENTION TO RAILROAD ACCOUNTING

IN A LETTER ADDRESSED early this spring to the Chairman of the Interstate Commerce Commission, the American Institute of Accountants' Committee on relations with this Commission, listed principal differences existing between the accounting practices of railroads and of industry in general. This list and the paragraphs identifying it appeared in the Committee's letter, together with succeeding paragraphs relating to "replacement" accounting. They are as follows:

"Our Committee has reviewed the accounting practices of railroad companies prescribed by the Uniform System with a view to determining which practices are at variance with those followed by business generally. Our studies indicate that the principal variations, as to which a change would be required to bring about conformity with generally accepted accounting principles, are as follows:

1. "The retained income account (formerly called profit and loss account) of the railroads relieves current income of items which under generally accepted accounting principles would be included as charges or credits in current income.
2. "Appropriations are made by railroads under the category of 'disposition of current income' for items such as sinking funds and other capital requirements which under generally accepted accounting principles are not of an expense nature and would not be chargeable to income.
3. "Income taxes are dealt with on the basis of charging railway operating expenses for essentially all accruals and adjustments of income tax, whereas other industries allocate a portion of such taxes to other accounts and/or to other years when there are divergencies between the handling of major items of income or expense for tax purposes and for financial accounting purposes.
4. "The acquisition adjustment account of the railroads comprises a variety of diverse elements. Under generally accepted principles of accounting, identification and segregation of the respective elements would be required and, as to certain elements, the establishment of a policy for ultimate disposition might be appropriate.
5. "The railroads do not deal with long-term debt maturing in one year and certain other liabilities as current liabilities.
6. "Voucher drafts outstanding are shown as liabilities rather than reductions of cash.

"Complex and intricate accounting problems are involved in some of the variations in practice enumerated above.

* * *

"In addition the Committee has given consideration to the 'replacement' method of accounting with respect to ties, rails, and other track materials in contrast to 'depreciation' methods which have become generally accepted practice in other industries and for other categories of railroad property. Replacement accounting for track components has been continuously followed by the railroads since at least 1914 when it was incorporated in the first Uniform System of Accounts adopted by the ICC. Over the years a number of studies have been made of railroad property accounting methods. A significant change was made in 1943 by the adoption of depreciation accounting for other categories of road property, but 'replacement' accounting was continued for track components. More recently, in 1949, a study was made of the accounting for this category of property covering the period 1917-47. After completion of this study and subsequent discussions with the Association of American Railroads the ICC dropped the subject from its agenda and continued its

requirement for the 'replacement' method of accounting as to track components. The replacement method has also been accepted by the Treasury Department for income tax purposes since March 1, 1913.

"During this same period other industries have come to adopt depreciation accounting for most categories of property, although differences between industries continue to exist as to the methods of allocating charges between accounting periods, in the differentiation between maintenance and capital expenditures and in the level of maintenance assumed in setting lives.

"The Committee believes that 'replacement' accounting does not accord with practices generally followed by other industries. As to track components, however, the Committee, in consideration of the long history of the use of replacement accounting by railroads with respect thereto, the unique nature of this category of railroad property, its relatively stable physical quantity, and the mature economic status of the industry, has concluded, with one member dissenting, that no substantial useful purpose would be served by a change to depreciation accounting techniques in the absence of evidence indicating that depreciation-maintenance procedures would provide more appropriate charges to income for the use of such property.

"We have also given consideration to depreciation practices as to depreciable road property as defined in the Uniform System of Accounts, with particular regard to two aspects:

(a) "Because of the difference between book value of property other than ties, rail and other track materials on certain railroads as compared with the valuation determined by the Interstate Commerce Commission, which is the basis for computing book depreciation, there are certain material amounts carried in 'depreciable properties' as defined in the Uniform System which are not being depreciated.

(b) "Most railroads have been making provision for depreciation on depreciable road property only since January 1, 1943. Under generally accepted accounting principles when provision for depreciation is commenced sometime during the life of an asset, additional provision is usually made to retained income or to income over a period of relatively few years to catch up on past accrued depreciation. Subsequent retirements have corrected the situation on some railroads but there may be some that are faced with the problem of the adequacy of present reserves.

"Inasmuch as these problems pertain to particular roads and are not present in a great many others because of reorganization or other circumstances, we are not prepared to report at this time on the status of these items or to make recommendations as to their disposition. At a later date, when we have been able to complete our studies, we will report further.

"The basic question as to all these variations, it seems to us, is whether, in the public interest and, at the same time, with full regard to the objectives of the Interstate Commerce Commission in the fulfillment of the responsibilities with which it is charged, it is appropriate and desirable that the Uniform System be brought into conformity, at least for purposes of financial reporting, with generally accepted principles of accounting. Our Committee considers that, in a technical sense, its own views in relation to this question are relevant only to the extent that a question of sound accounting practice is involved. From that viewpoint, our Committee believes that the Uniform System, for the purpose of financial reporting, should conform to principles of accounting which are generally accepted elsewhere in business and industry in this country where similar circumstances are present. Our Committee stands ready, and would welcome the opportunity, to cooperate with your Commission to the end that that objective may be achieved."